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ABSTRACT

In 1991, a study was conducted to determine the differential effects of placement testing on cultural, linguistic, and ethnic groupings in the San Diego Community College District (SDCCD). The study was conducted in two parts. The first part examined the characteristics of the students used to norm the Comparative Guidance Program (CGP) tests used by the SDCCD for placement and compared these characteristics to the tested sample at SDCCD. The second part of the study examined the disproportionate impact of testing on the placement and enrollment of various groups of students into remedial and college-level English and reading courses. In addition, part two of the study tracked the enrollment patterns of these same student cohorts into the following semester to determine their representation in degree-applicable courses. Study findings included the following: (1) students in the SDCCD population differed from those in the CGP population in that they worked more hours, took more time in the transition from high school to college, and were more predominantly male and ethnically diverse; (2) Anglo-American students performed similarly across the SDCCD on the reading test, while Asian students had the lowest English and reading test scores overall; (3) Anglo-American students performed better on the reading test than did non-Anglos; (4) approximately 93% of the Anglo-American examinees chose to enroll in a degree-applicable course, while among Latino-, Hispanic-, and African-American students, the percentage enrolling in a degree-applicable English course was approximately 67%; and (5) persistence into the spring semester did not appear to differ for the various ethnic and racial cohorts tracked in the study, although Anglo-Americans showed the lowest persistence rate. (JMC)

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SKILLS TESTING AND DISPROPORTIONATE IMPACT

An Analysis of the Reading and Writing Test Performance of Students in the San Diego Community College District

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Spring 1991

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SKILLS TESTING AND DISPROPORTIONATE IMPACT

EXECUTIVE SUMMARY

Purpose

This study is intended to shed some light on the differential effects of placement testing on cultural, linguistic, and ethnic groupings in the San Diego Community College District (SDCCD) Outcomes examined include the relative proportions of students of different backgrounds and input characteristics testing and subsequently entering pre-collegiate, or "remedial" courses. Also, this study seeks to determine if a disproportionate impact can be observed between these remedial courses and subsequent degree-applicable coursework in terms of the ethnic and gender composition of enrolling students To conduct this activity, testing, placement and enrollment data are analyzed in order to observe what types of differential outcomes are occurring for different groups of students as they move through the process of testing, placement, enrollment, and, if applicable, re-enrollment the following semester. To better understand observed differences, data are included which provide essential information regarding the input, or entry-level characteristics of students in the study.

This report is a two-part study. Part I examines the characteristics of the students used to norm the Comparative Guidance Program (CGP) tests used by the SDCCD for placement and compares these characteristics (when applicable) to the tested sample at the SDCCD. This is done to note similarities and differences between the original norming group and the SDCCD tested group. Data included for comparison are the ethnic and racial breakdowns, native language, gender, and age. Test score averages and the distribution are compared to detect differences in performance that may help to account for any disproportionate impact. In addition, non-cognitive data are included which compares educational plans for the two groups, and other entry characteristics of the populations such as high school GPA, and courses taken in high school, which would help to illuminate observed differences in performance on the tests.

Part II of this study examines the disproportionate impact of testing on the placement and enrollment of various groups of students into remedial and college-level English and reading courses and tracks the enrollment patterns of these same student cohorts into the following semester to determine their representation in degree-applicable courses.

METHOD

Part I

Part I of the study uses retrospective data obtained from two primary sources. These include Fall, 1988 testing information for first-time students obtained from the micro-computer based CAPP® automated assessment system in place at the colleges. This information includes gender, age, ethnicity, enrollment plans, and admission status (first-time, returning, etc.). Test information gathered includes number correct on the CGP Reading and Writing tests, number attempted, and last question attempted on the respective tests. These data were converted to ASCII format and exported to the Research and Planning micro-computer network for analysis with the Statistical Package for the Social Sciences (SPSS). Additional conversions were conducted at this juncture, including raw to standard score conversion for norming group comparison purposes, percentile calculations, and recategorization of data to match as closely as possible the categories of the original norming group.

The second source of data for Part I was the technical manual and other test information supplied by the CGP test publisher. This manual includes norming group data, test directions, and statistical characteristics of the tests themselves. Using this information, Research and Planning examined the performance and characteristics of the original norming sample and compared this information to the SDCCD tested population for Fall, 1988 to detect differences in the demographic profile of the two groups and their performance on the tests.

Part II

This part of the report uses data obtained from three primary sources. SDCCD mainframe data included Fall, 1988 English course grades and demographic information collected on the enrollment application and entered into the Integrated Student Information System (ISIS) by admissions and records personnel. The second source of data was from the micro-computer based automated assessment and placement system which provided information on Fall, 1988 placement levels, number correct on the tests, number attempted on the tests, and responses to questions about past educational achievement and future educational goals. These data were merged on a micro-based database system and exported to SPSS for additional file manipulation and statistical analysis. Lastly, student transcript data on the mainframe were accessed to determine the persistence rates of the students who placed and enrolled in non-degree-applicable courses during the Fall, 1988 semester. These data were then examined by ethnic group to determine disproportionate impact.

RESULTS

Part I - Norming Study

The SDCCD student population under analysis, differ in several ways from the national sample of community college students used in the CGP norming study. The SDCCD students tended to work part- or full-time, take several years in the transition from high school to college, and for Asian-American, Filipino, Latino-, and Hispanic-American students, indicate a language other than English as their primary language. These findings suggest that differences in performance on the standardized tests compared with the norming population and performance differences among ethnic groupings, may be due in large part to the observable differences in high school GPA, native language, English course preparation, and reported transition time from high school to college.

The "typical" student in the CGP sample was an 18-20 year old Anglo-American female. In contrast, the "typical" SDCCD student in the sample was older (18-35 years old) and slightly more likely to be male. The SDCCD sample represented a more ethnically diverse group than the national sample. The SDCCD sample consisted of a significantly smaller percentage of Anglo-Americans, a slightly smaller percentage of African-Americans, and a larger percentage of Asian-Americans, Latino-, and Hispanic-Americans. This larger representation of linguistic ethnic groups in the SDCCD sample may partially explain some of the observed differences in overall performance on the two tests compared to the more homogeneous norming sample. Other data on the characteristics of the norming sample indicated that a higher percentage of them were entering directly from high school. By contrast the SDCCD group had a much higher percentage of students with at least one intervening year, and often two or three years, of work before returning to school.

Part II-Disproportionate Impact of English and Reading Assessment

Test Performance

Anglo-American students perform similarly across the SDCCD on the Reading test, indicating that on the average, these students answer two-thirds of the questions correctly. In general, the Mesa student sample scored somewhat higher on the CGP Reading test for the various ethnic groups measured. The lowest scores achieved were generally by the non-Anglo students. Asian students across the SDCCD had the lowest English and Reading test scores overall. (This reflects difficulties with English language comprehension.) Although students are given the option of taking the CELT test for non-native speakers of English, it appears that many potential ESL students, particularly Asian students are opting to attempt the CGP Reading and English tests. This is confirmed by analysis of English course enrollment by ethnicity. A high percentage of the Asian-American students placing below college-level English enrolled in pre-collegiate ESL courses (English 41, 57, 58, 60, 61, and 62). This same pattern is also evident for Hispanic- and Latino-American students.

Placement

Anglo-American students perform better on the Reading test , and are recommended to enroll in college-level coursework at higher rates than non-Anglos. Approximately 60% of Asian-American students are encouraged to enroll in non-credit, pre-college-level English courses, and approximately 35% of Latino/Hispanic-American students are advised to enroll in pre-collegiate remedial courses in English. Although English language comprehension may explain some of the differences in performance on these tests, students are to have been previously screened to a special test administered to Limited English Proficient (LEP) students. Even for native speakers of English, there appears to be differential performance compared to Anglo-American students. For African-American students, the percentage recommended for pre-collegiate writing courses is approximately 15%, while the percentage recommended for similar developmental courses in reading jumps to almost one-third. Well over 90% of Anglo-American students perform well enough on the Reading test to immediately enter degree-applicable courses.

Enrollment

Approximately 93% of the Anglo-American examinees chose to enroll in a degree-applicable course. This percentage parallels very closely the placement recommendations obtained from the test scores. Among Latino-, Hispanic-, and African-American students, the percentage enrolling in a degree-applicable English course is approximately 67%. Analysis of the type of course enrolled in is instructive. Many Asian-, Latino-, Hispanic-American, and Filipinos did enroll in English-as-a-Second Language (ESL) courses, while African-American students enrolled in both non-degree reading and writing courses in approximately equal proportions.

On the surface it would appear that testing is having an effect on the enrollment patterns of students traditionally under-represented in higher education; Latino-, Hispanic-, Asian-, and African-Americans. However, it is not evident that testing alone is responsible for this disproportionate distribution of students among the various levels of college courses. What is lacking here are comparative data on enrollments prior to the implementation of the testing program. That is, would the distribution of students in below college- level courses be similar on the basis of self-selection or other forms of counseling that existed prior to the implementation of Matriculation? While the data presented are compelling, without such comparisons, it is difficult to identify standardized tests or other "objective" sorting procedures as the reason.

Persistence

Persistence into the Spring semester does appear to differ for the various ethnic and racial cohorts tracked in this study. Asian-American students demonstrated the highest persistence rate of the groupings in the analysis. Of the approximately 33% of Asian-American, Non-AA enrollees in the Fall semester, almost 70% returned and enrolled in at least one degree-applicable course the following Spring. Anglo-American students demonstrated the lowest persistence rate. Of the approximately 8% enrolling in non-degree-applicable English courses in the Fall, 41% returned the following Spring and enrolled in degree-applicable course(s). For the rest of the cohorts, the rate of persistence as defined here was approximately 50%. These data indicate that there is substantial attrition between the semesters, but this effect is observable for all groups in the study, and does not appear to be systematic. Thus, it appears that while skills testing does affect the enrollment patterns of cohorts tracked in this study, the re-enrollment patterns appear consistent for all groups with the possible exception of Anglo-American students who demonstrated the lowest persistence rate.

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BACKGROUND AND INTRODUCTION

Over the past three decades tests have come to be used as administratively convenient and inexpensive tools to help solve an array of troubling problems in education and the workplace. There are a great many implications, and not all positive, to using tests as instruments of policy. Specifically, when any single instrument is used to allocate educational, or vocational opportunities, it will occur that some capable people - often people of traditionally under-represented ethnic and language backgrounds - are misclassified. This has raised national concerns over the impact of "aptitude" testing on the educational, social, and career aspirations of individuals throughout our society. Since their first appearance as an occupational classification device during World War I as the Army Alpha and Beta tests, standardized tests have been used both as indicators of aptitude, and predictors of performance. The use of these instruments has grown geometrically since that time, and there is hardly an aspect of our educational and occupational spheres that is not affected by standardized testing.

Precisely because tests have become such an integral part of our society, the testing debate has taken on added importance. The increasing cultural and linguistic diversity of our population has greatly sharpened the focus on standardized tests as allocators of opportunity. This is particularly true here in southern California where groups traditionally under-represented in the educational system will become the new majority. Critics contend that these tests are measures of cultural assimilation and not aptitude, and therefore discriminate unfairly against certain groups. Proponents of testing argued that tests, while imperfect as either indicators of current achievement levels or predictors of future accomplishments, were in many instances superior to available alternatives. The debates during the 1960's and 1970's culminated in the passing of the first "truth in testing" law in California in 1978 (Senate Bill 2005, Dunlap). This "test disclosure" legislation required developers of standardized tests to file financial disclosure statements, copies of test materials, and answers to test questions with appropriate state agencies. Many of the current arguments regarding testing in the 1990's can be found in the testimony and hearings taking place in the 1970's.

Testing and Equity

Among proponents of equal access and expanding opportunities in higher education, there are few issues that generate as much heat as testing and assessment. The basis for much of this disagreement in the applications of testing is not difficult to understand, given the following observations:

1. Latino-, Hispanic-, African-Americans, and poor students are substantially under-represented in American higher education, especially in the more select or elite institutions;
2. Universities and colleges rely heavily on two measures: the high school grade point average and scores on standardized college admission tests, to select students and,
3. Latino-, Hispanic-, African-Americans, and poor students tend to receive lower high school grade point averages and lower test scores than do other groups.

The continuing over-reliance of such measures by college and university admissions personnel will make it very difficult for any educationally underprepared group to be represented equally or proportionately in higher education (Astin, 1991).

When examining the role of testing in educational or vocational settings it must be remembered that test scores are at best only an estimate of what someone actually knows or can do. Tests sample only a small portion of what someone knows or can do at a particular time. Scores can be influenced by several factors largely unrelated to what the test purports to be measuring. This often results in persons of similar skill levels receiving markedly different scores. According to the National Commission on Testing and Public Policy (1990), such factors might include:

1. Test anxiety
2. Test sophistication
3. Test-taking habits
4. Attitudes toward tests
5. Test directions
6. Noise level of the testing environment
7. Language of the test
8. Native language of the examinee
9. Cultural background of the examinee
10. Special coaching
11. Even "not having eaten breakfast." (*ibid* p. 7)

Further, several studies have indicated that neither scores on tests nor *any other single indicator* can precisely predict how performance will differ from one individual to the next (Sticht, 1986; Cohen & Friedlander, 1988; National Commission on Testing and Public Policy, 1990). This is because other factors essential to satisfactory performance and adjustment to college such as asking for help, study habits, cooperation, motivation, attitude, economic and social well-being, and a variety of institutional or environmental variables such as financial aid, adequacy of counseling, library hours, and tutorial services, are not reflected in test scores.

With the understanding that tests are far from perfect indicators of actual performance in school, it is expected that many people who could perform adequately will fail or the fall below the "cutoff" score needed for access on the test. This problem of cutoff scores is essential to understanding the role of testing and its importance in acting as a barrier to educational equity or as a useful tool in placing students in courses appropriate to their skill level. Simply put, the accuracy of classification by test score must be addressed by trying to examine, of those who can perform adequately, how many are excluded due to low test scores?, and, of those who cannot perform adequately, how many place above the cutoff score for access? While subsequent reports will specifically address these questions, Part II of this study examines the impact of testing on certain linguistic and culturally under-represented groups in the SDCCD as they move through the testing, placement, and enrollment process.

Misclassification and Disproportionate Impact

As stated above, some mislabeling of individuals is bound to occur because all methods of predicting human behavior are not precise. As advocated by experts in the field of education and training, *multiple measures* of performance must be used in determining the aptitude or ability of individuals to succeed in a given curriculum or training program (Cohen and Friedlander, 1989). Such cognitive measures might include high school GPA, prior courses taken, native language, employment status, educational objective, and years out of school. According to Astin (1991), other non-cognitive measures might include student self-assessments, intellectual self-confidence, perceived importance of college attendance, self-esteem, and other affective data. The importance of multiple measures are of primary importance when decisions about placement are made. It is when test results are used independently of other relevant information to classify individuals in ways that affect their opportunities that can lead to inequities. This is of particular importance when discussing the impact of testing on certain under-represented ethnic, cultural, and language

groups. Studies of the performance of these traditionally under-represented groups have shown that they traditionally perform less well on standardized tests than does the dominant culture in the U.S. For example, African-Americans in recent years have scored approximately 100 points below Anglo-Americans on the Scholastic Aptitude Test (SAT). Poorer performance has also been noted for Latino- and Hispanic-Americans, Native-Americans, Pacific Islanders, Asian-Americans and other under-represented groups. Women, as a group, also score lower than men on the SAT and other college entrance tests (Astin, 1991).

Given that tests used independently are imperfect predictors of performance for all individuals, and that certain under-represented ethnic groups typically do not perform as well on standardized tests as do majority group members, it follows that there is a strong possibility that disproportionately fewer individuals from these under-represented groups, who are capable of success had they been given the opportunity, will be selected. It is on this area that this study focuses, specifically some of the effects of placement testing on the advising, placement, performance, and following-semester persistence of students, with particular emphasis on under-represented students in the SDCCD. Both federal civil rights laws and the Title V Assessment regulations require that issues of disproportionate impact of testing be addressed. Specifically, if an ethnic group is represented in basic skills courses in a significantly different proportion than in the tested group, then assessment procedures must be examined. Further, if an ethnic group is represented in college-level courses after basic skills coursework in a smaller proportion than other ethnic groups, a disproportionate impact is believed to occur and the college is asked to explain why this has occurred and to develop and implement appropriate intervention strategies to correct this situation. The philosophy and approach of this study are consistent with federal and state mandates (Title V Assessment regulations) to address issues of disproportionate impact.

A lawsuit filed by the Mexican-American Legal Defense Fund (MALDEF) in 1988 alleged that Fullerton College used scores on a placement test to force students to take non-credit, remedial courses before they could enroll in courses carrying college credits that were transferrable to four-year colleges and universities. The suit, which has been expanded of this writing to include 19 other colleges charges that colleges named have violated the matriculation law and due-process guarantees of the California constitution by refusing to allow some students to enroll in college-level courses for credit. This lawsuit adds another dimension to the on-going testing debate and further underscores the importance of the use of tests for placement and not selection. It is then highly relevant that the effects of the assessment process on students be documented and if disproportionate impact in terms of enrollment in remedial courses or next-semester persistence is observed, that the colleges are then able to take appropriate steps to address the issue.

Purpose and Approach of this Study

This report is a two-part study. The first section examines the characteristics of the students used to norm the Comparative Guidance Program (CGP) tests used by the SDCCD for placement and compares these characteristics (when applicable) to the tested sample at the SDCCD. This is done to note similarities and differences between the original norming group and the SDCCD tested group. Data included for comparison here are the ethnic and racial breakdowns, gender, and age. Test score averages and the distribution are compared to detect differences in performance that may help to account for any disproportionate impact. In addition, non-cognitive data are included which compares educational plans for the two groups, and other entry characteristics of the populations which would help to illuminate observed differences in performance on the tests.

This study is intended to shed some light on the differential effects of placement testing on cultural, linguistic, and under-represented ethnic groups in the San Diego Community College District. Outcomes examined include the relative proportions of students of different backgrounds and input characteristics testing and subsequently entering pre-collegiate, or "remedial" courses. Also, can a

disproportionate impact be observed between these remedial courses and subsequent degree-applicable coursework in terms of the ethnic and gender composition of enrolling students ? To conduct this activity, testing, placement and enrollment data are analyzed in order to observe what types of differential outcomes are occurring for different groups of students as they move through the process of testing, placement, enrollment, and, if applicable, re-enrollment the following semester.

DATA SOURCES

Part I

This section of the study uses retrospective data obtained from two primary sources. These include Fall, 1988 testing information for first-time students obtained from the micro-computer based CAPP® automated assessment system in place at the colleges. This information includes gender, age, ethnicity, enrollment plans, and admission status (first-time, returning, etc.). Test information gathered includes number correct on the CGP Reading and Writing tests, number attempted, and last question attempted on the respective tests. These data were converted to ASCII format and exported to the Research and Planning micro-computer network for analysis with the Statistical Package for the Social Sciences (SPSS). Additional conversions were conducted at this juncture, including raw to standard score conversion for norming group comparison purposes, percentile calculations, and recategorization of data to match as closely as possible the categories of the original norming group.

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Limitations

True experimental design with random assignments to treatment and control groups of individuals is not possible in our setting. The SDCCD had implemented a testing and placement system and procedures for referral have been in place using the current assessment system since 1987. Establishing an initial placement procedure is a much easier task than overhauling or fine-tuning an existing one where the population has been pre-selected and sorted on the basis of test score and other criteria used to advise and place students. Thus while it is possible to retrospectively examine the effects of testing on various groups of students, it is somewhat more complicated to systematically validate the cut-off scores for each group.

A further limitation is the availability of data. To be included in this study, students had to be first-time freshman students taking the assessment tests between July 1 and September 15, 1988 and, subsequently enrolling and receiving a grade in a remedial, or basic skills English or writing course in Fall, 1988. In addition, this group was then tracked into the following spring semester to determine persistence rates of this remedial group. This group was further broken down into ethnic and racial groups by college for tracking purposes to detect disproportionate impact. The strict criteria for inclusion was intended to yield as many "true" matriculants as possible, but also resulted in small sample sizes, particularly when examined by test, and by ethnic grouping within college. Therefore when necessary, results will be reported on a districtwide basis in order to yield more generalizable results and reduce the potential bias of small sample sizes. Because the SDCCD uses the same assessment and placement system, and has course equivalency across the colleges, it was felt that in some instances reporting districtwide results would yield more reliable estimates of performance, particularly when reporting persistence rates the following semester. Students can re-enroll in any one of the colleges, and often did, therefore it seemed reasonable to report persistence rates across the district for the sample under analysis. It is intended that an additional study year be included to increase the sample sizes to enable persistence rates to be reported for each of the colleges and the Educational Cultural Complex (ECC).

The Role of Educational Skills Assessment in the Community Colleges

Background

The community colleges represent perhaps the most dynamic sector of higher education in California. Partly because of this dynamism, many of the policy issues that are emerging today were also present at the inception of the community college movement decades ago. These issues include access to and the quality of undergraduate education, and the nature of undergraduate admissions or intake processes at the community colleges. (Cohen, 1988).

An integral component of the institutional mission of the California community colleges is to create an educational environment that is responsive to all adults interested in strengthening their academic or vocational skills. This notion of equal access for all adults resulted in open-door admissions polices at the two-year colleges and a substantial portion of the population in the late 1960's and early 1970's took part in the educational offerings of the colleges. Today, as then, many persons equate open admissions with absence of any academic performance criteria in the admissions process. An alternative view of open admissions requires that all students interested in furthering their education be able to do so without undue restrictions. Under this view, special academic requirements that rely in part on past academic performance and preparation or test scores in determining admission or access to courses are viewed by some as restrictive. This view holds to the notion that these types of criteria are incompatible with open admissions and the mission of the community college.

The use of tests as indicators of ability and classification tools is viewed warily by some in the community colleges and other segments of higher education. Some maintain that the very use of standardized testing creates a barrier for some individuals. This viewpoint was widely held in the 1970's (ACT, 1985) when concern about the appropriate uses of standardized test information in the admissions practices of post-secondary institutions was often voiced. According to Knoell (1983) and Cohen (1988), many institutions adopted unconditional open admissions policies during the early years of the community college movement due, in large part, to the arguments about the use of tests in the colleges as classification devices.

The Test Debate in the Current Context

While debate over the merits of standardized tests continues, there has also arisen a series of changes which have brought about a new look at the role testing can play in the community college environment. The growing diversity of students enrolling in the community colleges including increasing numbers of women, ethnic and racial groups, limited English proficient (LEP) students, students with learning and physical disabilities, and a general growth in the participation rates of older, working, and hence, part-time students.have increased the use of testing as a standard metric of aptitude. Concerns over the value of the high school diploma as an indicator of the level of competency attainment have led to calls for minimal competency testing by states. Increasing numbers of dropouts from the high schools were re-entering the educational system, often at the community college-level. Thus, the tremendous diversity of entering abilities and input characteristics of the potential student population has militated strongly for some standardized metric of ability. Tests were again being viewed as one source for this kind of information. In addition, other changes were taking place in the enrollment and course taking patterns of students. A growing number of students were attending part-time and working, leading to increased time to attain the AA or other desired degree. In the view of some policymakers, this was leading to inefficiencies in the course taking patterns of students who were enrolling in courses without some assumed level of pre-requisite knowledge and unable to meet the course objectives, or were over-qualified for a course and became bored and dropped out. It was believed that if the college experience could be made more intensive, with a comprehensive program of admissions, orientation, placement, advisement, counseling, and follow-up, that students would realize their goals more rapidly, the colleges could provide more relevant educational experiences and preparation for the student, and greater efficiencies in college operations would result. The implementation of matriculation (Assembly Bill -3, Chapter 1467:Seymour-Campbell Matriculation Act) by the California state legislature in 1986 was one approach to these concerns and issues (Fields, 1988; p. 72).

According to the State Chancellor's Office of the California Community Colleges, matriculation in the California community colleges is a process intended to promote and sustain the efforts of students to identify and attain their educational goals by providing a program of support services tailored to the needs of individual students. To implement this process, each college was given the responsibility to provide an admissions process, an orientation to college services and procedures, pre-enrollment skills assessment, advisement and counseling for course selection, a "suitable" curriculum, follow-up on student progress with referral to support services when needed and a program of institutional research and evaluation. Specifically, the intent of matriculation is:

1. To ensure equal education opportunity for all Californians,
2. To ensure that students receive the educational services necessary to optimize their opportunities for success, and,
3. To provide students with the information to establish realistic educational goals and ensure that the matriculation process does not exclude students from receiving appropriate educational services at the colleges (AB-3, 1986; p. 2).

Preliminary findings from the State Chancellor's office indicate that several community colleges report greater retention rates and higher course completion rates since the implementation of matriculation. In hearings before the Assembly Committee on Higher Education, several college administrators suggested that students participating in matriculation progress through the institution more successfully. Many suggested that that these improvements were due in part to better advisement and placement, enabling students to begin coursework at a level commensurate with their skills.

This issue of determining appropriate skill level and subsequent placement of students in courses is of primary importance in the testing debate. On this point, the legislation is clear:

1. *Assessment instruments shall be used as an advisory tool to assist students in the selection of an educational program.*
2. *Assessment instruments shall not be used to exclude students from admission to community colleges.*

The issues of testing as they relate to community colleges pose formidable challenges. Although community colleges in California do not employ admission standards on the basis of high school grade point average and Scholastic Aptitude Test scores, (all adults are eligible to attend), there has been a discernible trend in the growth and use of standardized tests to "place" students according to their indicated skill level in courses that are to be commensurate with their skills. This trend is particularly evident since the implementation of the Matriculation legislation.

PART I

Testing and Placement in the San Diego Community College District

About the Placement Tests

The SDCCD reading and English placement program uses the *Assessment and Placement Services for Community Colleges* tests developed by Educational Testing Service (ETS) of Princeton, NJ. These tests are drawn from the Comparative Guidance Program (CGP)which was a testing program developed in the late 1960's at ETS. The English, or Writing portion of the tests is the revised version of the CGP and the Reading test was introduced in 1984. The tests are hereafter referred to in this report as the CGP tests.

Reading

The 25 minute Reading test contains 35 multiple-choice questions based on 8 reading passages. These selections, which are mostly written by contemporary writers use content drawn from the natural sciences, social sciences, and contemporary life. They vary in style and exemplify different types of writing: straightforward reporting, persuasive writing, and description. Questions are intended to measure the student's comprehension of main ideas and specific details and their ability to make inferences and extract the meaning of vocabulary in context.

The test developer states that the achievement scores are meant to differentiate among students who are "adequately prepared for a college's academic work and those who may need developmental work, and they are useful in placing students in appropriate English courses." (College Board, 1985; p. 6) Specific abilities tested and the related questions are shown in Table 1.

Table 1

Reading Abilities Assessed and Corresponding Test Items on CGP Reading Placement Test

Specific Abilities in Reading	Test Questions Used
Understanding main idea	1, 8, 13, 21, 24, 25, 28, 30
Understanding secondary idea	3, 5, 6, 9, 16, 19, 20, 23, 34
Ability to make inferences	12, 14, 16, 17, 22, 26, 29, 31, 33
Understanding vocabulary in context	2, 4, 7, 10, 11, 15, 27, 32, 35

Source: CEEB, 1984

Writing

The writing portion of the test contains 40 multiple-choice questions intended to measure a student's ability to perform the "kind of writing usually required of students in colleges." (CEEB, p. 6) The test questions assess abilities to recognize errors in grammar, usage, word choice, etc. The test appears to place emphasis on sentence structure, and clear expression in ideas and thoughts. There is no writing sample included in the assessment, the test relies strictly on responses to four-part multiple-choice items.

According to the test developer, a student scoring high on this assessment has a high probability of being able to write correctly and effectively. They cite prior research (Godshalk, 1966) which indicated that scores on multiple choice questions similar to those used in the writing test are highly correlated to scores received by students on essay tests based on high inter-rater reliability. The specific writing competencies assessed and relevant test items are shown in Table 2.

Table 2

Writing Abilities Assessed and Corresponding Test Items on CGP Writing Placement Test

Specific Abilities in Writing	Test Questions Used
Sentence recognition	1, 18, 22, 37
Sentence structure	4, 25, 28, 34, 35, 36
Pronoun problems	3, 7, 20, 29, 33, 40
Language and style	2, 5, 13, 15, 23
Verb problems	8, 17
Logic	10, 12, 16, 21, 24, 27, 31, 32, 39
Recognition of error-free construction	6, 9, 11, 14, 19, 26, 30, 38

Source: CEEB, 1984

Scores and Technical Data

According to the publisher, the tests were scaled such that the score range extended from 20 to 80 in terms of standard scores, with an average of 50 and a standard deviation (SD) of 10. Thus the tests were originally scaled such that approximately two-thirds of the original norming group should have scores between 40 and 60.

The placement test scores are intended to provide information to predict performance in college-level courses in writing and reading, but do not provide diagnostic information. A longer test involving repeated samplings of a targeted knowledge domain or competency area would be required to make diagnostic referrals. As they are currently implemented, the placement tests are used solely for recommended referral to appropriate reading or writing courses, and performance on groups of questions or "competency clusters" is not reported.

The Samples Included in this Study

In the tables and graphs which follow the samples used for the original CGP norming were obtained from the descriptions furnished by the College Board in the technical manual accompanying the CGP tests. The current assessment program norms used by the test publisher were developed in 1979 on a random sample of approximately 31,000 students taking the tests nationally. There were some 90 colleges represented in the norming sample. Of these, most were public comprehensive community colleges located in the eastern half of the country. These colleges represent the majority of the cases in the original norming sample.

For the SDCCD, unless otherwise noted, the tested population included Fall, 1988 first-time freshman students testing between July 1 and September 15, 1988. An exception to this are the data for the SDCCD students presented in figures 1, 2, 3, and 4 where the entire tested population for Fall, 1988 are included for comparison purposes. This was done because much of the data on the questionnaires were incomplete for the first-time population, thus it was decided to include all students to yield a larger comparison group for that set of measures.

Statistical Characteristics of the Tests

The means and standard deviations for the total norming group are shown in Table 3. Included in this table are the means and standard deviations of the SDCCD students included in this study. Scores for the norming population are expressed in standard scores and for the SDCCD students in both raw and standard scores. Both raw and standard scores are reported because the SDCCD uses raw scores for placement decisions, however, only standard scores are available from the test publisher. Therefore in some cases the raw scores have been converted into standard scores using the guidelines offered by the test publisher. There are advantages to using standard scores. One statistical advantage is that the greater range of theoretical distribution of the standard scores can have the effect of increasing variation on the criterion or outcome measure, an advantage when computing correlations or other measures of association. Also, the use of standard scores limits the use of scores at the extremes of the distribution for placement. One positive effect of this is to reduce the possibility of a referral based on statistical probability at the lower end of the range of possible scores. The range of the standard scores for the reading test is from 20 to 69, while the writing test ranges from 20 to 71. There are 35 items on the reading test and 40 items on the writing test. Because the SDCCD relies on raw scores for referral, the range and standard deviations are somewhat smaller and hence more restricted in terms of the distribution. Lastly, if the tests are to be used in the manner intended by the test publisher, all technical data for test scores and norming groups ought to use standard scores. Any updates the test publisher may provide in terms of ethnic, gender, and linguistic group comparisons will be published using standard scores. It is also conventional to use standard and not raw scores in interpretation.

Table 3

Means, Standard Deviations, and Distribution of Students in the Norming Sample and SDCCD Tested Population in Fall, 1988

	CEEB NormingSample			San Diego Community College District Tested Population (First-time students)				
Test	N	Mean*	Std. Dev	N	Mean Raw Score	Std. Dev	Mean Standard Score	Std. Dev
Reading	30,912	48.28	10.38	4,680	19.67	7.76	46.50	11.41
Writing	30,912	49.31	9.62	4,676	23.55	7.27	47.01	10.58

*Expressed in standard scores

As indicated in Table 3, the mean scores on both the reading and writing tests for the SDCCD population are lower than for the original tested population. Although no tests of significance were computed, one can infer that the differences are statistically significant because of the relatively large sample sizes in each of the comparison groups. The differences, while probably significant, are not great and within the standard error of measurement. There also appears to be somewhat greater variability in the SDCCD sample as evidenced by the larger standard deviations reported for each of the tests. Again, while these differences appear to be statistically significant, they seem to be of minimal practical significance in terms of differences.

Table 4

Means, Standard Deviations, and Distribution of Students SDCCD Tested Population by College in Fall, 1988

Test	City			Mesa			Miramar			ECC		
	N	Mean Score	Std. Dev	N	Mean Score	Std. Dev	N	Mean Score	Std. Dev	N	Mean Score	Std. Dev
Reading	2,671	19.01	7.96	692	22.03	6.28	1,110	20.97	7.28	201	13.16	7.16
Writing	2,669	22.99	7.19	692	25.64	6.19	1,109	24.67	7.27	201	17.88	7.70
Reading Std Score	2,671	45.54	11.71	692	49.99	9.22	1,110	48.41	10.75	201	43.86	10.80
Writing Std. Score	2,669	47.44	10.81	692	50.07	9.05	1,110	48.64	10.57	201	39.11	10.34

***Expressed in both raw and standard scores. The SDCCD does not use standard scores to report scores nor for advisory placement. Standard scores are provided here to enable comparisons with the national norming sample for whom standard scores only are reported.**

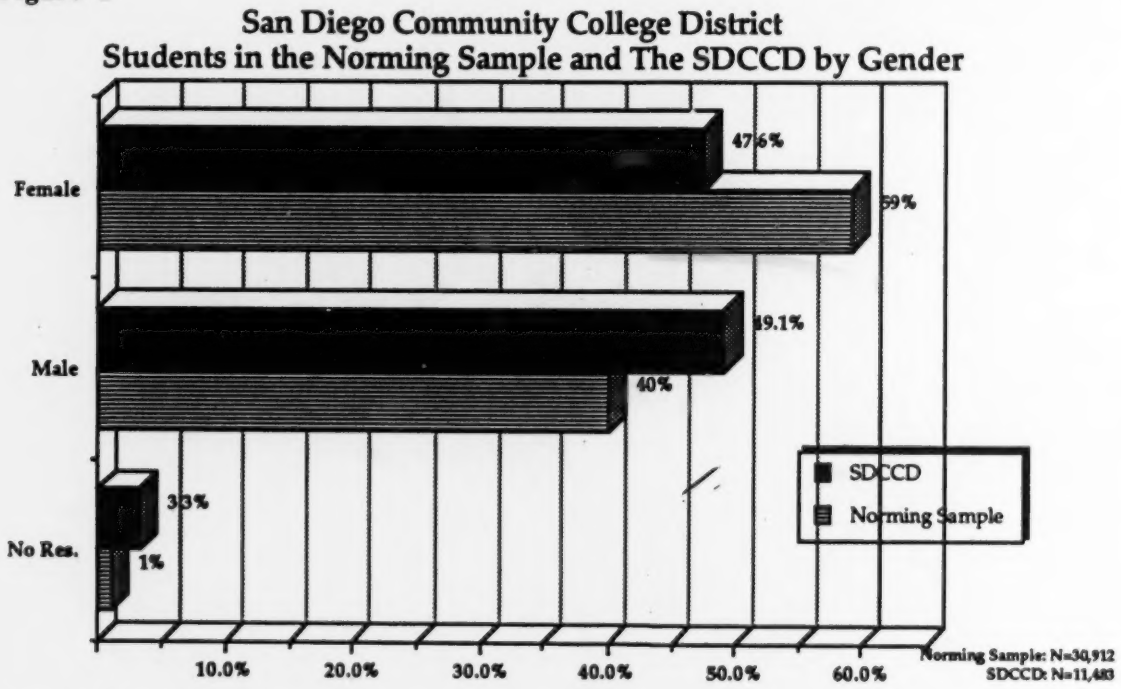
Table 4 presents comparisons of the reading and writing test scores of the SDCCD tested population by campus. With the exception of ECC, scores on the reading test appear generally similar for the campuses. For City College, the average score on the reading test was approximately 19, with a standard deviation of approximately 7.96. For Mesa College the average score was slightly higher, 22.03, with a standard deviation of 6.28. Reading scores for the Miramar tested population was approximately midway between City and Mesa Colleges at 20.97 with a standard deviation of 7.28. Again, while differences exist among the three college campuses, they lie within the error of measurement reported by the test publisher and confirmed by this study. At the Educational Cultural Complex, (ECC), scores on the reading test were significantly lower ($p<.05$) than the mean scores reported by the other three campuses. This indicates that the tested population at ECC may be in greater need of remedial or developmental coursework or additional preparation to begin work at the college-level than their counterparts at the other campuses. The low scores for ECC appear to be significantly different than the original norming population. Thus counselors and other individual performing advisement functions should attempt to include other measures of ability and motivation in recommending a placement level for the student.

A similar pattern of test performance can be observed with respect to average scores on the writing test. As indicated in Table 4, the City College sample had slightly lower scores on the CGP writing test than did either the Mesa or Miramar samples. As with the reading test however the differences, while appearing statistically significant, are not of much practical significance. However, as was the case in the distribution of CGP Reading test scores, the sample at ECC scores approximately a full standard deviation below students at Mesa and Miramar Colleges, and approximately one-half a standard deviation below students at City College. The sample sizes for the sites does differ dramatically, but they appear to be adequate to be statistically reliable. This difference appears to be of practical significance and further underscores the need for multiple measures of achievement and predictors of performance at ECC.

Demographic Comparisons with the Norming Sample

To gain additional insights into the composition of the norming group compared to the SDCCD sample, demographic data comparing these two groups are presented in Figures 1,2 and 3. As with the test score data presented earlier in this report, the demographic data presented for the norming group was obtained from the CGP technical manual. Comparable data were derived from the automated micro-computer based assessment system in place at the colleges and ECC. For age and ethnicity, data had to be recategorized and coded to be aligned with the data provided by the College Board because reported ethnic and racial categories differed and the age groupings were not strictly comparable. The results of these comparison follow.

Figure 1



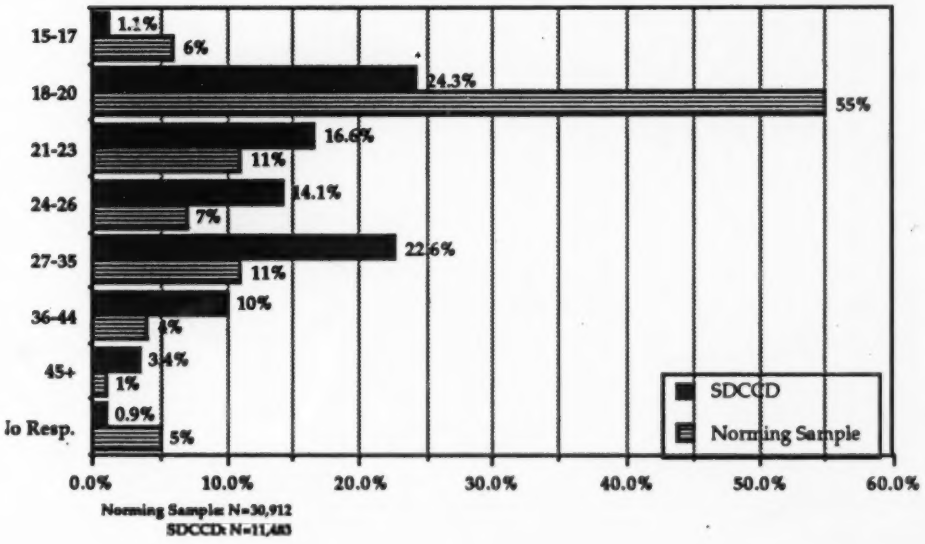
*Includes entire Fall, 1988 tested sample in order to increase cell sizes for comparison purposes

Gender. In the norming sample, approximately 59% were female and 40% were male. For the SDCCD tested sample of first-time college students the percentage of females was approximately 48% and the percentage of males was approximately 49%, with 3.3% not responding to the question. These proportions were found to be reliably different ($p<.01$).

Age. The age distribution presented in Figure 2 for the two samples was found to be reliably different ($p<.01$). Approximately 61% of the norming sample was under 21 years of age, and 28% were above age 23.

Figure 2

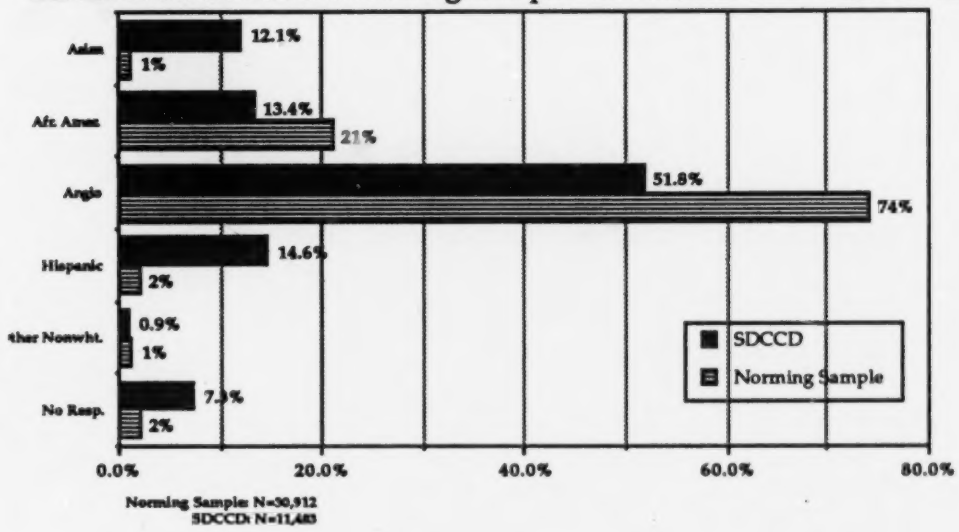
San Diego Community College District
Students in the Norming Sample and the SDCCD by Age



Ethnicity and Race. Students from racial and ethnic groups who have been traditionally under-represented were approximately 26% of the norming sample, while traditionally under-represented groups comprised approximately 48% of the SDCCD sample. Significant differences can be noted for the proportion of Hispanic-, Latino-, and African-American students in the norming sample compared to the SDCCD sample. These differences were found to be reliably different ($p<.01$). As indicated earlier in this report, a review of literature reveals that, in general, non-Anglos generally perform less well on standardized reading and English tests. The greater proportion of non-Anglos and non-native English speakers in the SDCCD sample may help to explain the somewhat lower reported test score differences between the norming sample and the SDCCD group.

Figure 3

San Diego Community College District
Ethnic Distribution of Norming Sample and The SDCCD Tested Sample



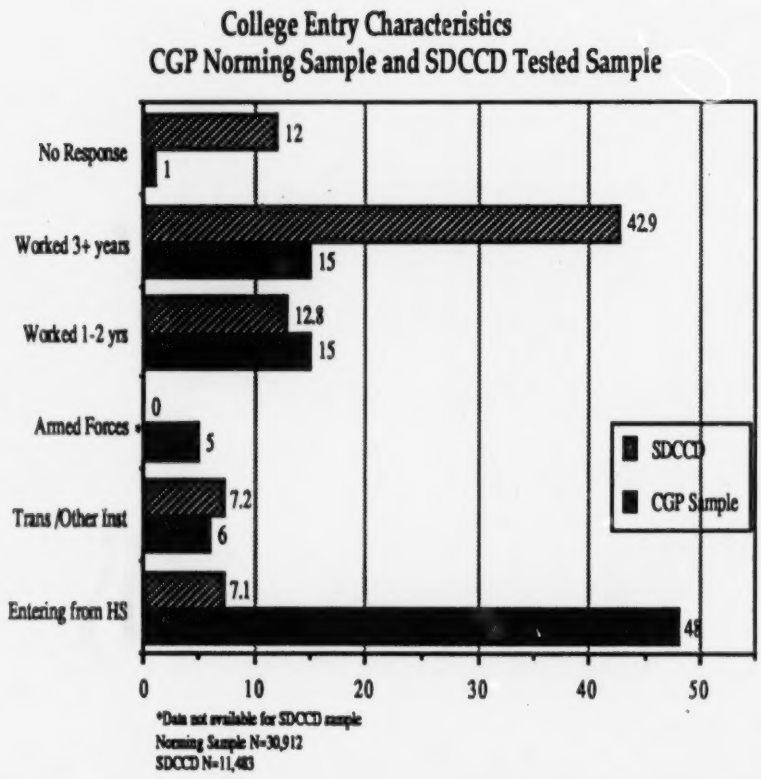
Demographic Comparisons Summary

As suggested by Figures 1-3 the "typical" student in the CGP sample was an 18-20 year old Anglo-American female. In contrast, the "typical" SDCCD student in the sample was older (18-35 years old) and slightly more likely to be male. The SDCCD sample represented a more ethnically diverse group than the national sample. The SDCCD sample consisted of a significantly smaller percentage of Anglo-Americans, a slightly smaller percentage of African-Americans, and a larger percentage of Asian-, Latino- and Hispanic-Americans. This larger representation of under-represented linguistic groups in the SDCCD sample may partially explain some of the observed differences in overall performance on the two tests compared to the more homogeneous norming sample. Other data on the characteristics of the norming sample indicated that a higher percentage of them were entering directly from high school. By contrast the SDCCD group had a much higher percentage of students with at least one intervening year, and often two or three years, of work before returning to school. Thus, their performance on the tests may have been hampered somewhat by the time spent in non-academic pursuits and the forgetting of certain concepts. Also, their test taking skills may have atrophied somewhat in the one to three year absence from schooling. This may partially explain the somewhat lower overall performance on the tests by the SDCCD sample compared to the CGP norming sample.

Educational Background and Aspirations

Comparisons were made between the "entry" characteristics of the CGP sample and the SDCCD tested population. As can be seen in Figure 4 on the following page, there appear to be distinct differences between the entry characteristics of the CGP group and the SDCCD sample.

Figure 4



One obvious difference is the percentage of students who reported having worked three or more years before starting college. A substantially higher percentage of the SDCCD student group report working three or more years prior to the start of their college career than do the CGP students. Conversely, as one might expect, a much higher percentage of CGP students report entering college directly from high school compared to the SDCCD group. Approximately 48% of the CGP students reported entering college directly from high school compared to only 7.1% of the SDCCD sample. The majority (56%) of the SDCCD sample had worked at least one year before entering college. This is almost twice the rate for the norming sample which reported approximately 25% working at least one year before starting college. This finding may have significance in terms of differences in test performance of the two groups. One might expect that the group with fewer intervening years between high school and the start of college to have higher test scores than the group who had delayed the start of their college career for several years. Test taking skills can become "rusty," and certain concepts forgotten between high school and college. For those who have been away from school for a while, the test taking situation can produce greater anxiety, particularly for those who are less confident in their abilities to succeed or have generally lower academic self-esteem. These findings suggests that during the orientation process, students perhaps should be introduced to the skills testing process, and perhaps given some tips on how to prepare for standardized tests. In addition, some materials might be distributed to those students who have been out of school for some time to enable them to "brush-up" on some of the vocabulary or mathematics skills they may have forgotten. This might improve their performance or at the very least, give a more accurate measure of ability than of test anxiety when making a placement recommendation.

Background Characteristics of SDCCD Tested Group

Analyses of the educational preparation levels of the SDCCD tested population were conducted in order to better understand some of the entry characteristics of this group which might explain differential performance on the assessment tests and subsequent placements in English courses. Self-reported data were collected for the test population and examined by ethnic grouping to observe differences in high school GPA, grades received in last English course taken, transition time from high school to college, and the number of years of English taken in high school. These analyses are presented in the figures which follow.

Figure 5

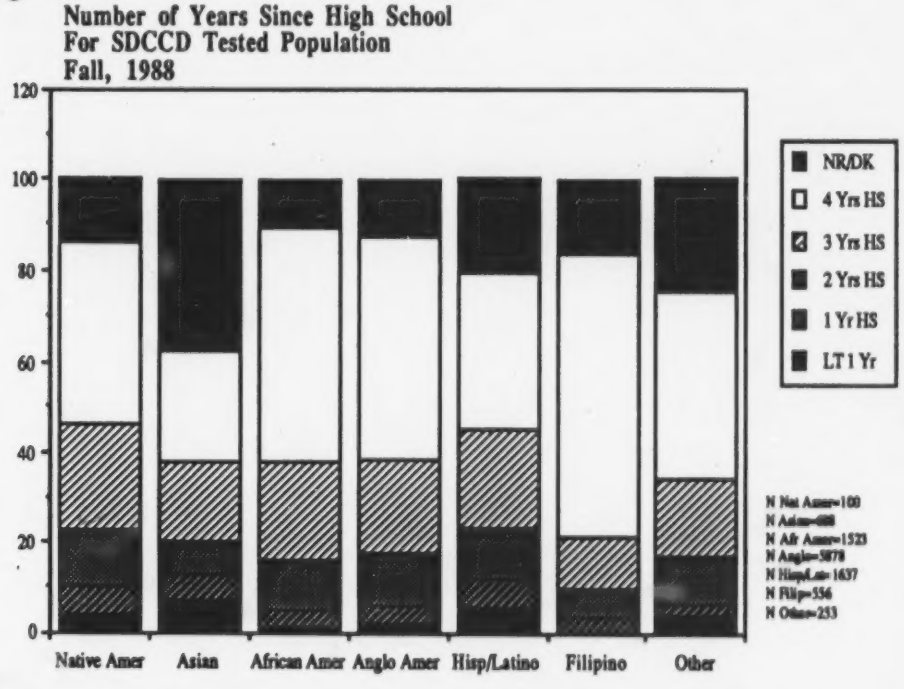


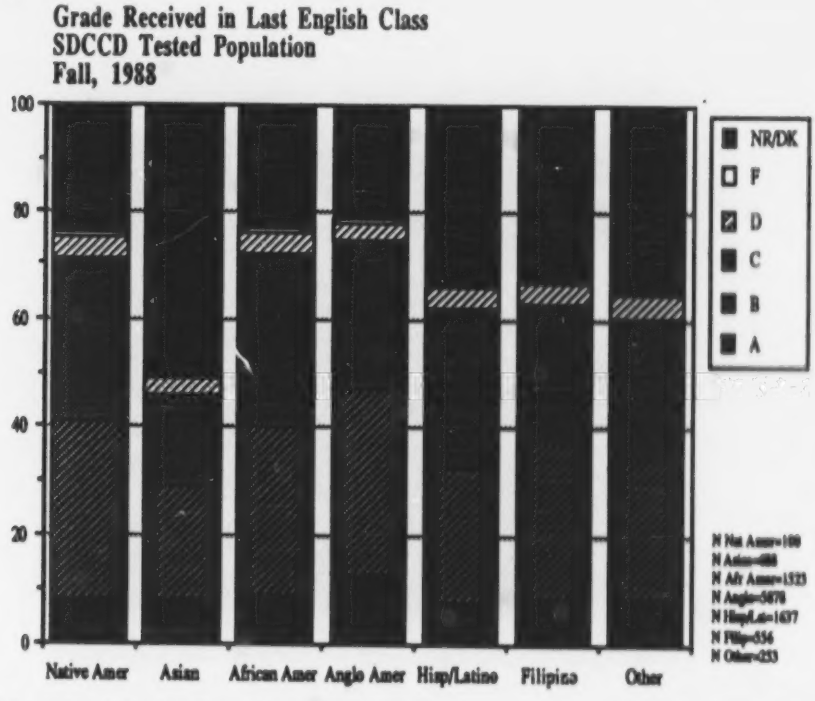
Figure 5 indicates the transition time in terms of years the students reported in making the transition from high school to college. It should be noted here that these data also include non-first-time students, hence these statistics may include students who have been previously enrolled in college, but may not have taken assessment tests at the SDCCD. As indicated in the figure, Asian- and Latino-American students generally report the shortest transition time from high school to college, and Anglo- American, African-American, and Filipino students the longest. As suggested earlier, the length of time elapsing in the transition from high school to college may result in the forgetting of certain concepts measured on standardized tests. In addition, test taking skills may have atrophied in that period of time. This may partially explain the somewhat poorer performance on the assessment tests observed for African-American and Filipino students. However, this does not appear to explain the differences in Asian-, Latino-, and Hispanic-American students performance on the tests.

Also readily observable in figure 5 and some of the figures which follow, is the high number of non-responses to the questionnaire, particularly by Asian-, Latino-, Hispanic-American students. While it is presumed that, to some extent, assessment technicians at the colleges are attempting to appropriately refer limited English proficient (LEP) students to the ESL placement test, it appears from these data, and from discussions with counselors and admissions technicians that many LEP

students opt to take the CGP tests even though these are intended for individuals who are English proficient. The high percentage of non-responses to the questionnaire may be a reflection of the limited proficiency of these individuals in English, and thus, may be a factor in understanding differential performance on the English and reading tests. In examining the data, because it appears that traditionally under-represented linguistic students apparently have greater difficulty in responding to the survey questions, it may be that when required to read passages of some complexity or interpreting vocabulary words in the actual test, the competencies displayed in the self-assessment questionnaire are replicated somewhat in the responses to the test items.

The high number of non-responses to the questions also confound analyses of the data. In the absence of responses to these important survey questions, attempts to explain or understand differences in test performance and hence placement and enrollment advice and decisions are severely curtailed. A primary goal of Matriculation is to improve the admissions, orientation, and assessment processes at the colleges (AB-3, 1986). The data collected on the questionnaire are vital to informing these processes for enhancing student success, thus greater efforts should be expended to assist students in completing the questionnaire. The survey questions may also be used as an assessment referral tool. If a student appears to be experiencing great difficulty in reading or understanding the questions, then assessment technicians may advise that student to take the ESL test, or refer them to a counselor for alternative assessment. It appears that the pattern of non-response rates to the survey questions generally reflects the test score distribution, particularly for traditionally under-represented linguistic students.

Figure 6



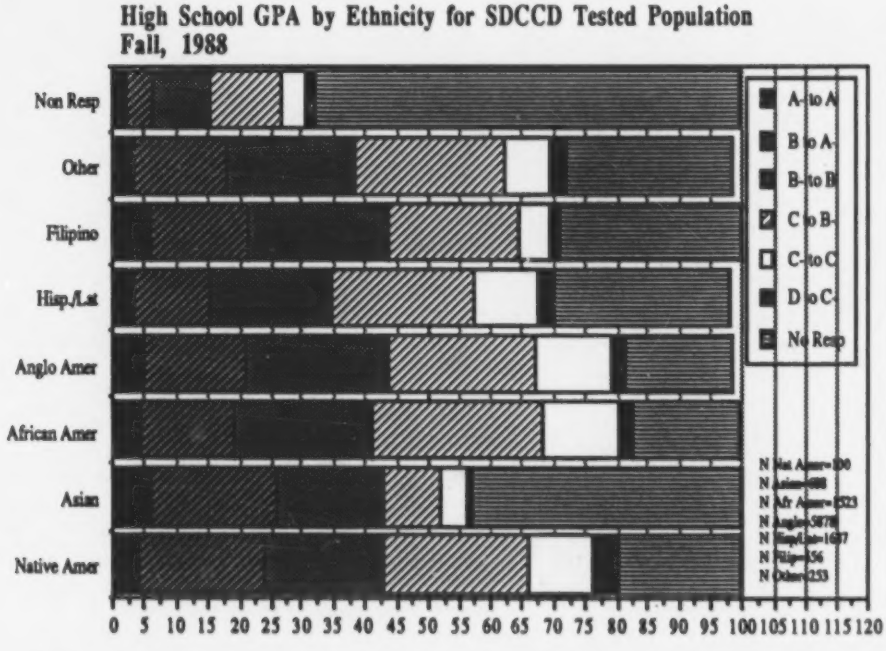
Differences among the various ethnic and linguistic groupings can be observed in the reported grade received in their last English class. Anglo-American students reported higher percentages of A and B grades in their last English class compared with all other students. Again, there are a high number of non-responses to this question, which limits somewhat the generalizability of these findings. However, when analyzed solely for first-time freshmen students who responded to the question, these self-reported differences remain (see figure 6). Thus it appears that, at least in part, differences in test scores

are attributable to prior achievement in English courses. This information can be useful to both counselor and students when decisions about placement level are made.

High School GPA of Tested Population

Figure 7 below depicts the distribution of self-reported high school GPA of the SDCCD tested population for the semester under analysis. These data indicate that Filipino, Asian-, and Anglo-American students generally report higher high school GPA's than Latino-, Hispanic-, and African-American students. Although these are self-reported data, prior research conducted by Astin (1990), with students in higher education indicates that self-reported GPA's tend to be accurate representations of true GPA.

Figure 7



These GPA data may also help to account for the observed differences noted in the performance of these ethnic and linguistic groupings on the CGP tests. The generally higher performance of the Anglo American students on the tests may partially explain their better than average performance on the skills assessments. Interestingly, Asian-American students report generally higher GPA's than do Latino-, Hispanic-, and African-American students, yet as noted earlier in this report, their scores on the tests tend to be lower than these two groups. Explaining this phenomena is less clear. It may be that the standardized testing situation with its emphasis on speed, reading, quick decision-making, and independent work, produces a different indicator of ability than that produced during actual course-taking conditions where the dint of extra effort often matters as much as skill or aptitude in determining success. It has already been discussed earlier that the SDCCD tested population had a much higher proportion of non-native speakers of English than the original norming population. When analyzed by ethnic grouping, as is done in Figure 7, other variables that might account for differential performance are evident.

Figure 8

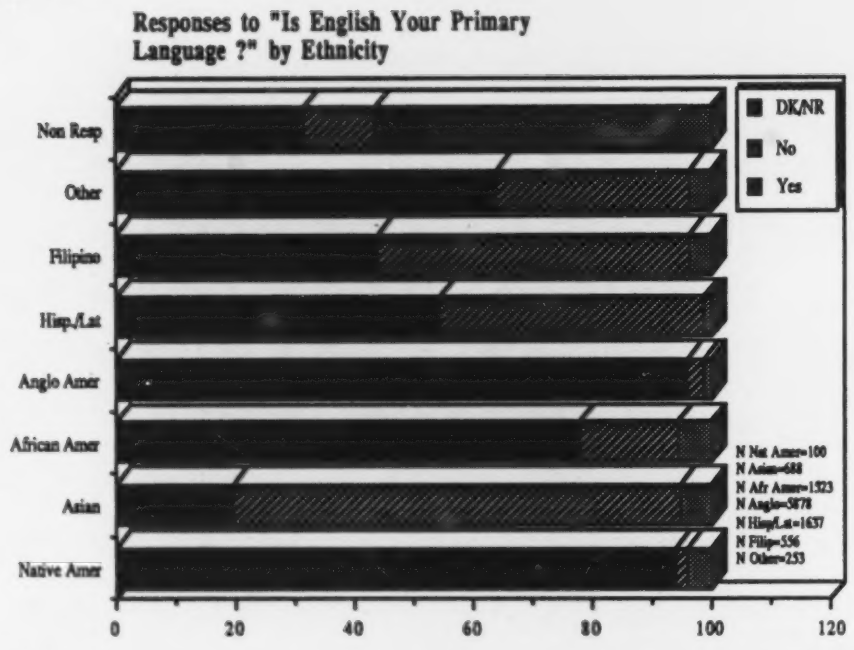


Figure 8 indicates the self-reported primary language of respondents. The percentage of students reporting English as their primary language varies greatly when examined by ethnic and racial grouping. For example, among Native-American respondents, approximately 94% report English as their primary language. Among Asian-American students, only 19.5% report English as their primary language, while 75% report some language other than English as their primary language. Among African-American students, approximately 80% report English as their primary language, while among Anglo-American students, approximately 96% report English as their primary language. Among Latino- and Hispanic-American students, approximately 54% report English as their primary language,while 45% do not. For Filipino students, a majority (52.5%) report that English is not their primary language.

As noted earlier in the report, although students are given the option of taking the ESL test or seeing a counselor for alternative assessments, many students whose primary language is not English are choosing to take the CGP tests which are intended for native speakers of English. This finding suggests that student differences in performance can be explained in part by their level of English language comprehension. This may also partially explain the high number of non-responses observed to survey questions included with the assessment tests pertaining to educational characteristics described above.

Educational Background and Characteristics Summary

The SDCCD student population under analysis differ in several ways from the national sample of community college students used in the CGP norming study. The SDCCD students tended to work part- or full-time, take several years in the transition from high school to college, and for Filipino, Asian-, Latino-, and Hispanic-American students, indicate a language other than English as their primary language. These findings suggest that differences in performance on the standardized tests compared with the norming population, and, as will be discussed in Part II of this report, performance differences compared with each other, may be due in large part to the observable differences in high school GPA, native language, English course preparation, and transition time from high school to college.

PART II

The Impact of SDCCD Assessment and Placement Practices on Ethnic and Linguistic Minorities

As described above, Part II of this study examines the disproportionate impact of testing on the placement and enrollment of various groups of students into remedial and college-level English and reading courses, and tracks the enrollment patterns of these same student cohorts into the following semester to determine their representation in degree-applicable courses. The design of this section closely parallels the model outlined in the 1990 technical report issued by the State Chancellor's office of the California Community Colleges, the Southern California Community College Institutional Research Association (SCCCIRA) and the Northern California Community College Research Group to study disproportionate impact (Kangas, 1989).

Data

This study uses retrospective data from Fall, 1988 and Spring, 1989. The analyses are limited to first-time students only in order to control for maturational factors which might affect their performance on the tests, course performance and persistence rates. It was believed that students with previous college experience would probably test better, and differ in other important ways from first-time freshman matriculating students. There were other criteria imposed on potential subjects for this study. To be included, students had to be first-time students tested during the Fall, 1988 testing period which ran from approximately July 1 to September 23. These students had to have taken both the CGP Reading and Writing placement tests, received a placement or skill level designation, enrolled in the designated English course that same semester, and had to have received a grade or a 'W' in the course. Additionally, because this study is primarily concerned with examining the proportional representation of various groups in non-college-level or remedial courses, a substantial portion of this group had to enroll in one of these courses to be included in the study. Finally, the group who enrolled and received a grade or a 'W' in the remedial English courses were tracked to the following semester to determine how many returned and enrolled in degree-applicable coursework. Such a research design is not without tradeoffs. Because of the strict criteria imposed by the design for subjects to be included in this study, small sample sizes for some of the sub-groups resulted. Therefore, whenever possible, data will be presented broken down by ethnic group for each campus. In some instances however, such as Spring semester re-enrollment, district-wide data are presented to preserve adequate cell sizes for some of the ethnic groupings.

Ethnic Distribution of SDCCD Tested Sample

On the following page Table 5 presents the ethnic and racial breakdown of the sample included in this study broken down by campus and totals for the SDCCD. City College contributes the largest number of cases to the analysis, followed by Miramar College, Mesa College, and ECC. A note should be made here that typically, Mesa College would have the largest number of first-time tested students for any given semester because of the high enrollment at that college. However, because of data storage problems, many of the cases for that semester were unusable for this study and the cases which are from Mesa College were included by attempting to overcome some of the technical problems with the data. Additional tracking of these data for another study year would hopefully result in Mesa having a more proportional representation in the database.

Table 5

Ethnic Distribution of SDCCD Student Sample Tested Fall, 1988 by Campus

	City		Mesa		Miramar		ECC		Total	
Ethnic Group	Num	%	Num	%	Num	%	Num	%	Num	%
Native American	27	1.0	6	.8	9	.8	1	.5	43	.9
Asian American	160	6.0	35	4.9	48	4.3	20	10.0	264	5.6
Pacific Islander	24	.9	5	.7	9	.8	0.0	0.0	38	.8
African American	529	19.8	33	4.7	56	5.0	101	50.2	720	15.3
Anglo American	1,143	42.8	497	70.2	782	70.0	17	8.5	2,440	51.9
Hispanic /Latino	560	21.0	63	8.9	80	7.2	44	21.9	744	15.8
Filipino	110	4.1	51	7.2	100	9.0	11	5.5	272	5.8
Other	62	2.3	13	1.8	20	1.8	3	1.5	98	2.1
No Response	10	.4	5	.7	13	1.2	4	2.0	33	.7
Total	2,672	100	692	100	1,110	100	201	100	4698	100

As indicated in Table 5, City College and ECC are the most ethnically diverse of the campuses included in this sample. This finding is generally reflective of the ethnic composition of these two sites; although in comparing the overall ethnic composition of City College to this first-time tested sample, this sample has a higher representation of African-, Latino-, and Hispanic-American students. This may be an indication of the changing demographic profile of the incoming City College student population and the primary service area of the college which includes downtown, and the southeast sections of San Diego. In general, the first-time sample groups at Mesa and Miramar Colleges appear to be similar to the overall population at these two colleges.

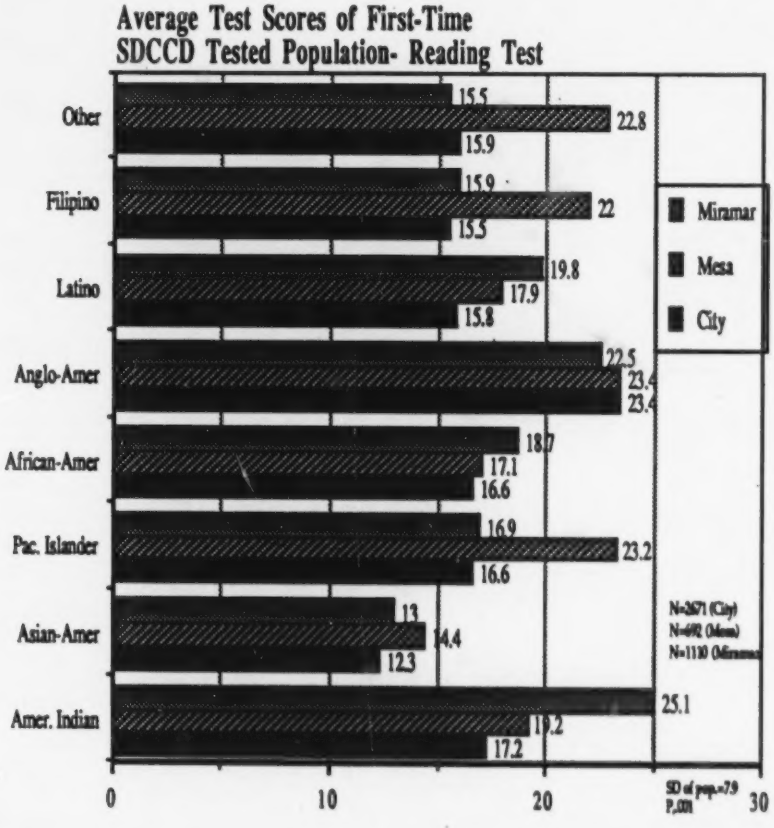
These distributions form the initial database from which the following analyses are performed. The identification numbers of the students identified in Table 5 were matched against the ISIS database and tracked for enrollment and completion of one or more English courses in Fall, 1988. As noted earlier, a large number of students initially tested were not identified in the subsequent data merge indicating that many did not enroll at all, ordid not enroll and complete an English course that Fall. As a result the sample sizes for some ethnic groups within the colleges shrink

substantially. However, cell sizes do remain sufficiently large to be suggestive of general trends in the area of differential impact of assessment and testing. The Research and Planning department plans to include another study year to determine the reliability of the findings.

Test Performance by Ethnic Group

As previously shown, Table 4 presented means and standard deviations of the entire Fall, 1988 SDCCD first-time student sample. Figures 9 and 10 present the mean CGP Reading and CGP writing raw scores by ethnic group for City, Mesa, and Miramar Colleges.

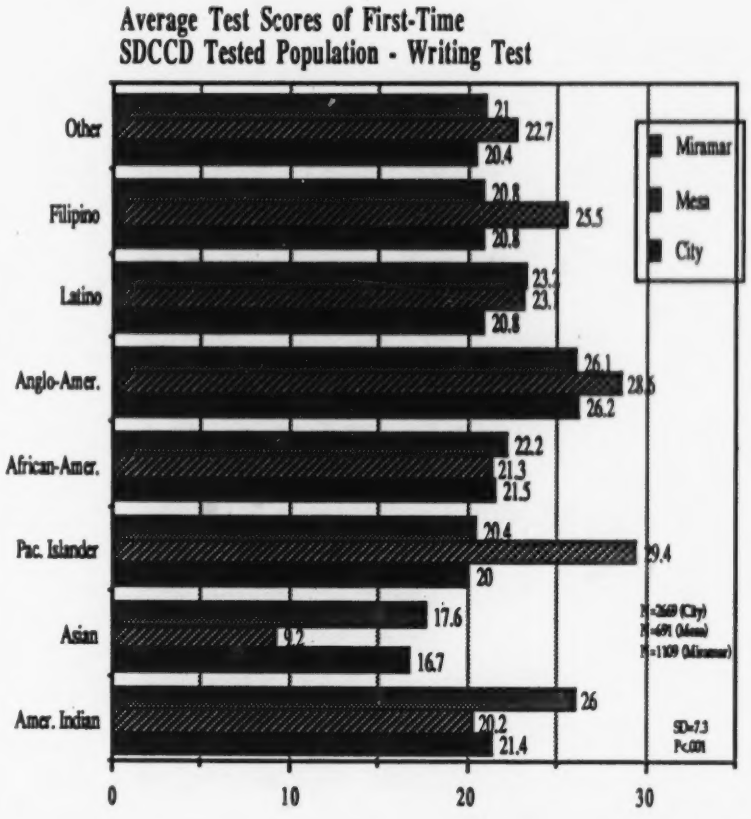
Figure 9



As indicated in figure 9, examination of CGP Reading test performance by ethnic group within college reveals some interesting differences. Anglo-American students perform similarly across the SDCCD on the reading test with an average score of approximately 23 (SD for pop.=7.9), indicating that, on average, these students answer two-thirds of the questions correctly. In general, the Mesa student sample scored somewhat higher on the CGP Reading test for the various ethnic groups measured. The lowest scores achieved were generally by the non-Anglo students at City College. Asian-American students across the SDCCD had the lowest test scores overall. This may reflect difficulties with English language comprehension. As noted earlier, in the testing and placement process, potential ESL students are given the option of taking the CELT test for non-native speakers of English or referral to the CGP Reading Test. From the data presented in the above figure, it appears that many potential ESL students, particularly Asian-American students are opting to attempt the CGP Reading test. This is confirmed by analysis of English course enrollment by ethnicity. A high percentage of the Asian-American students placing below college-level English

enrolled in pre-collegiate ESL courses (English 41, 57, 58, 60, 61, and 62). This same pattern is also evident for Hispanic- and Latino-American students. Primarily because of anomalies in the testing database and low cell sizes for the ethnic groupings, ECC data are not included in figures 9 and 10. Preliminary analysis of student performance at ECC however indicates lower overall achievement on the CGP tests, particularly for Asian- Latino-, and Hispanic-American students. At ECC the overall mean for the CGP Reading is approximately 17, (Std. dev=7.9) and for CGP Writing, 17.8. (Std dev=7.7). As indicated in the figure, statistically significant differences were found at the .001 level of significance among the scores received by various ethnic and racial groups measured. A similar pattern can be noted with respect to performance of the CGP Writing test. On the average, Anglo-American students score higher on this test than other ethnic or racial student cohorts. Also as with the CGP Reading test means scores, Anglo-American scores are similar across the three campuses. In general the tested sample at Mesa College achieved somewhat higher scores on the CGP writing than their counterparts at the other colleges.

Figure 10



As with the CGP Reading test, the Asian-American student sample performed the least well of the groups measured. This finding was evident across the colleges, and also noted in preliminary analysis done for the ECC group, but not included here. Again, this probably reflects English language comprehension more than "aptitude" as evidenced by the high percentage of Asian-American students subsequently enrolling in pre-collegiate ESL courses at the colleges. Also, as indicated in the above figures, African-American students perform less well than do Anglo-American students. Across all three colleges, the average score for African-American students is almost one-half of a standard deviation below that of Anglo-American students. Latino- and Hispanic-American students (with the exception of City and ECC) attain higher scores on both the CGP Reading and Writing tests than African-American students. Understanding these differences is less clear because ESL differences probably would explain less of the differences in score attainment for African-Americans than for Latino-, and Hispanic-American students. Additional analysis on the primary

language reported by students in the tested sample (native language of participant) does not indicate a high proportion of SDCCD African-American students as being potential ESL students. This is also confirmed by the relatively lower enrollment of these students in pre-collegiate ESL courses compared to the Asian-, Latino-, and Hispanic-American students as evidenced later in this report.

Last Question Attempted on CGP Reading and Writing Tests

To further explore the differences among the various racial and ethnic groups in the sample, an analysis of the last test questions attempted by each group was conducted. Because the tests are timed (25 minutes for each tests), this may affect the number of questions attempted by students depending on their level of English language comprehension. Prior test research (Anastasi, 1988) has suggested that the "speededness" of a test does much to affect test performance. In addition, cultural differences that may shape attitudes and expectations about testing, such as timed vs. non-timed, anxiety, etc., have also been found to affect test performance.

Tables 6 & 7

Last Question Attempted on CGP Reading and Writing Test by Ethnicity

Writing Test
Range=0-40

(Table 6)

Group	Mean	Standard Deviation	Cases
Entire Sample	**39.4**	**3.3**	**4,676**
Native-American	39.6	1.3	44
Asian-American	38.1	6.7	259
African-American	39.2	3.8	722
Anglo-American	39.7	2.3	2,421
Latino-American	39.1	4.1	742
Other	39.4	3.4	488

(P<.001)
N=4,680

Reading Test
Range=0-35

(Table 7)

Group	Mean	Standard Deviation	Cases
Entire Sample	**30.5**	**6.1**	**4,680**
Native-American	30.2	5.8	44
Asian-American	28.8	7.8	261
African-American	28.5	6.7	723
Anglo-American	31.2	4.8	2,423
Latino-American	28.7	6.9	741
Other	30.1	6.3	488

(P<.001)
N=4,676

Analysis of last question completed reveals some interesting differences among the groups measured. Overall it appears that the students are very close to attempting all test questions on the 40 item CGP writing, but vary more substantially on the CGP Reading. A noticeable difference appears in the last test question attempted for the Asian-American student group on the CGP writing test. As a group they tend not to be able to attempt the same number of questions or types of questions on the exam. One can also note that not only do they attempt the last questions in fewer numbers, but there is substantially greater variation within the group to attempt the test questions as suggested by the relatively high standard deviation. The same is true for the CGP Reading test, although in this case their performance is similar to other groups with the exception of Anglo-Americans. On both measures Anglo-Americans appear to address most test items, and do so with greater reliability than other groups examined. This finding may partially explain differences in test performance. This observation suggests that it may be worthwhile to extend the testing time by a few minutes so that more students are able to attempt all test questions. A oneway ANOVA reveals that these observed differences are significant at the .001 level. A similar difference was found to exist in the last CGP Reading test question attempted by the various groups in the study. Again, given the differences found between the SDCCD tested population and the CGP norming population in terms of educational preparation and ethnic background in Part I, extending by a few minutes the time to complete the CGP placement tests may result in better performance by all groups without negatively compromising the accurate placement of students.

A recent analysis conducted by the State Chancellor's office (Spring, 1991) also suggested a similar finding regarding the speededness of the tests. Consultants hired to examine and recommend an approved list of assessment tests to be used in placement remarked in their summary that there was concern over the speededness of the CGP tests. This finding lends additional support to the recommendation for extending the testing time by five-six minutes.

Placement Results based on CGP Reading and Writing Score

Tables 8 and 9 on the following pages present the SDCCD English placement recommendations based on CGP Reading, Writing, and in some cases, both scores. As indicated, depending on raw scores achieved, students are assigned a recommended placement level. Table 10 shows the English courses available in the SDCCD and divides them into pre-collegiate (Non-Degree applicable) and Degree-Applicable categories. To be eligible for degree-applicable (but still considered preparatory) Reading courses (English 56), the student must achieve a placement level of 4.0 on the CGP Reading (at least 13 correct). To be eligible for degree-applicable writing courses a student must achieve placement level of 4.1 on the CGP Writing and correctly answer at least ten items on the CGP Reading. For purposes of this study, students placing below these levels on the basis of test score were classified as non-degree-placed or remedial students. That is, their test scores placed them at too low a level to be eligible for English 51, 56, or any other course numbered 70 or above.

Table 8

Score Ranges for English Placement
READING

Level	Course Placement/Comment	Lower Score	Upper Score
1.0	Eng. 60 or ESL placement test	1	9
1.1	English 60	ESL Test	
2.0	English 61	ESL Test	
3.0	English 55	1	9
3.1	English 55	10	12
4.0	Eligibility. for Eng. 56. Eng. 55 strongly recommended.	13	15
4.5	English 56	16	21
5.0	Eligibility. for Eng. 56. Must meet wrtg. requirement for 101.	22 * 1	24 21
5.1	Eligibility. for Eng. 101. Eng. 56 strongly recommended.	22 *22	24 40
5.2	Must meet writing requirement for Eng. 101.	25 * 1	35 21
5.5	Eng. 101, 106	25 *22	35 40

*CGP Writing Test

Inspection of referral criteria indicates that in some cases students must achieve a certain score on both tests to be eligible for certain courses (e.g., placement level 5.1). However, in sorting students into degree-applicable and non-degree-applicable English course eligibility, only scores on a single test were used in this report. This was done for two reasons. One, the intercorrelation of the two tests according to the test publisher is .75. For the SDCCD tested population this intercorrelation was approximately .77. Therefore it is extremely unlikely that students would score high on one exam while scoring very low on the other. Two, analysis of the number of individuals who fit into these categories of high scores on one and low scores on another was 4% or less across all campuses. Thus, for purposes of clarity and to identify specific performance on each of the tests for the groups of interest, remedial (Non-AA) and collegiate (AA) sorting of students was based on a specific test score and the course for which it was intended to be a predictor (i.e., the writing test as a predictor of performance in a writing course). These results are presented in Figures 11 and 12.

Table 9
Score Ranges for English Placement
WRITING

Level	Course Placement/Comment	Lower Score	Upper Score
1.0	Eng. 60 or ESL placement test.	1 **1	40 9
1.1	Eng. 60	ESL Test	
2.0	Eng. 61	1	14
3.0	Eng. 50	1	14
4.0	Take Eng. 55 - Reading before writing course.	15 *1	40 9
4.1	Eligibility. for Eng. 51. Eng. 50 strongly recommended.	15 *10	17
4.5	Eng. 51	18	21
5.0	Recommend Eng. 51. Must meet reading. requirement. for 101.	22 *10	25 21
5.1	Eligibility. for Eng. 101. Eng. 51 strongly recommended.	22	25
5.2	Must meet reading requirement for Eng. 101.	26 *10	40 21
5.5	Eng. 101	26 *22	40 35

* CGP Reading Test
** CGP Reading Test and Quest. #27 = no
Quest. #27: Is English the language you read and write most of the time?

Test Performance by Ethnic and Linguistic Grouping

These tests are used to help sort students into those needing remedial or developmental, non-degree-applicable, instruction in English to those ready to to enroll in college-level, degree-applicable English courses. The results of this testing program on the English course placement recommendations of students by ethnic and racial grouping are presented in figures 11and 12 on the following pages. Figure 11 contains the distribution of reading placement recommendations based solely on test scores achieved by the ethnic and racial groupings indicated. Figure 12 contains the same data for the writing assessment, and like figure 11, indicates the proportions of the various ethnic groups referred to college-level, and pre-college-level courses. Bars labeled "AA" refer to Associate of Arts applicable courses and those labeled "Non-AA" refer to non-Associate of Arts applicable or remedial courses in English or writing.

Reading Assessment. Based on the referral criteria indicated in Tables 11 and 12, the students tested were distributed among AA and Non-AA levels for reading as indicated in Figure 11.

Figure 11

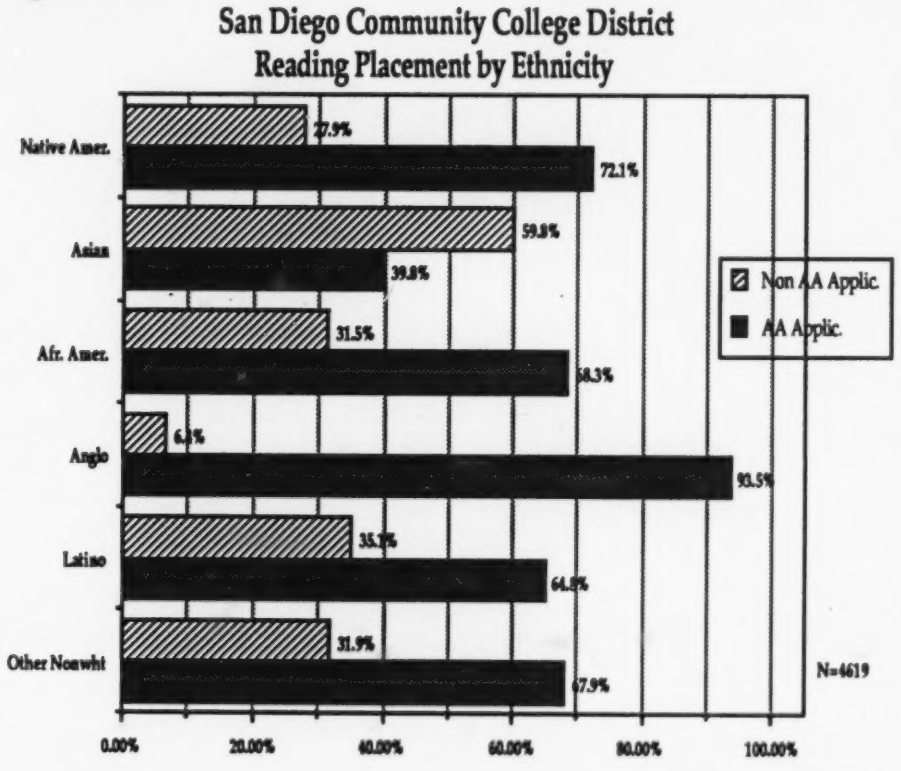
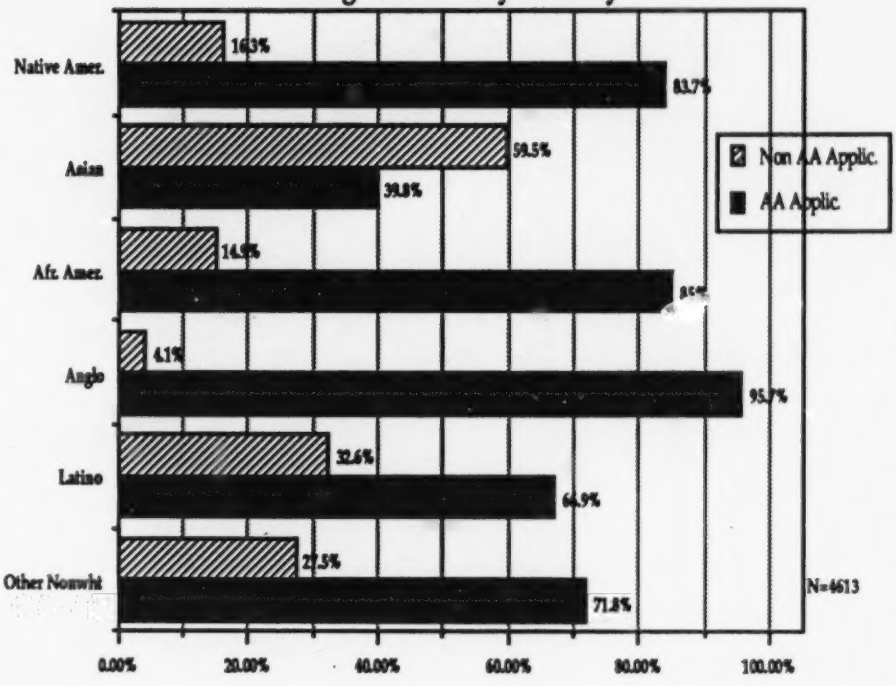


Figure 11 indicates that Anglo-American students perform better on the Reading test , and are recommended to college-level coursework at higher rates than non-Anglos. Approximately 60% of Asian-American students are advised to enroll in non-credit, pre-college-level English courses. As illustrated in Figure 8, indicating native language, it is likely that the majority of the Asian-American students referred to pre-collegiate level courses will be in ESL courses. Figure 11 also indicates that approximately 35% of Latino/Hispanic-American students are advised to enroll in pre-collegiate remedial courses in English. Although English language comprehension may explain some of the differences in performance on these tests, students are to have been screened before this test to a separate test administered to LEP students. Even for native speakers of English, there appears to be differential performance compared to Anglo-American students. For African-American students, the percentage recommended for pre-collegiate writing courses is approximately 15%, while the percentage recommended for similar developmental courses in reading jumps to almost one-third. Well over 90% of Anglo-American students perform well enough on the Reading test to immediately enter degree-applicable courses.

Figure 12

San Diego Community College District
Writing Placement by Ethnicity

Writing Assessment. From the criteria presented in Table 9 on page 27, for writing course placement, the distribution for each ethnic grouping can be observed in Figure 12. Approximately 96% of Anglo-American students score sufficiently high to be placed in college-level coursework.

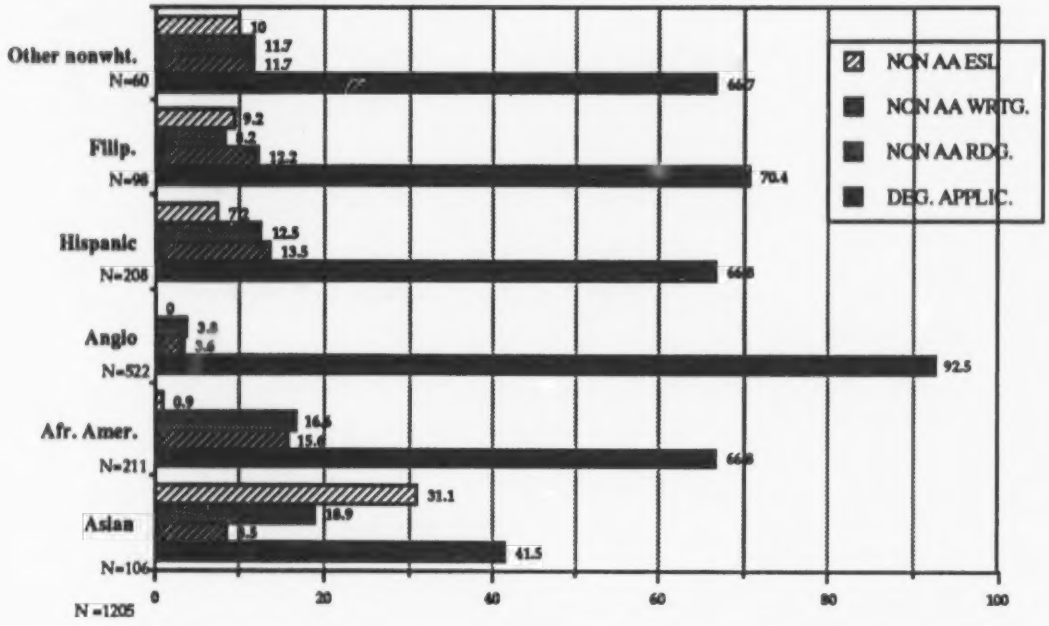


Standardized Testing and Enrollment Patterns of Students

As stated in the Matriculation regulations and as part of SDCCD policy, results from skills testing are intended to be recommendations only; students are able to enroll in higher level coursework if they choose to. However, it appears that many choose to follow the recommendations as to college-level course work as shown in figure 13 on the following page. These data are taken from the same cohorts tested in figures 11 and 12 above. This chart shows the subsequent enrollment patterns of these students in pre-collegiate, non-degree-applicable, and degree-applicable, credit English courses.

Figure 13

San Diego Community College District
English Course Enrollment by Course Type
and Ethnicity - Fall, 1988



Of those enrolling in an English class that same semester, approximately 93% of the Anglo-American examinees chose to enroll in a degree-applicable course. This percentage parallels very closely the placement recommendations obtained from the test scores. Among Latino-, Hispanic-, and African-American students, the percentage enrolling in a degree-applicable English course is approximately 67%. Analysis of the type of course enrolled in is instructive. As might be expected, many Asian-, Latino-, Hispanic-Americans, and Filipinos did enroll in English-as-a-Second Language courses, while African-American students enrolled in both non-degree reading and writing courses in approximately equal proportions.

Thus it does appear that testing is having an effect on the enrollment patterns of students traditionally under-represented in higher education; Latino-, Hispanic-, Asian-, and African-Americans. However, it is not evident that testing alone is responsible for this disproportionate distribution of students among the various levels of college courses. What is lacking here are comparative data on enrollments prior to the implementation of the testing program. That is, would the distribution of students in below college-level courses be similar on the basis of self-selection or other forms of counseling that existed prior to the implementation of Matriculation? While the data presented are compelling, without such comparisons, it is difficult to identify standardized tests or other "objective" sorting procedures as the reason.

Placement and Enrollment by College

On the following page, Table 10 presents similar data for the colleges. In this table the ethnic distribution of first-time students enrolling in non-AA and degree-applicable courses by ethnic and racial grouping are displayed.

Table 10

Ethnic Distribution of SDCCD First-Time Tested Student Sample Enrolling in AA and Non-AA Degree Applicable English Courses Fall, 1988 by Campus

	City			Mesa			Miramar			ECC			Total		
	AA	Non AA	N	AA	Non AA	N	AA	Non AA	N	AA	Non AA	N	AA	Non AA	N
Native American	84.6	15.4	13	100	0.0	5	100	0.0	4	0.0	0.0	0	88.2	11.8	17
Asian	32.8	67.2	64	58.3	41.7	24	53.3	46.7	15	33.3	66.7	3	41.5	58.5	106
Pacific Islander	25.0	75.0	4	100	0.0	2	66.7	33.3	3	0.0	0.0	0	55.6	44.4	9
African American	68.2	31.8	151	56.7	43.3	30	100	0.0	9	59.1	40.9	23	66.8	33.2	211
Anglo American	92.2	5.4	167	93.5	6.5	230	88.7	11.3	120	100	0.0	2	92.5	7.5	522
Hispanic /Latino	65.5	34.5	145	67.4	32.6	43	91.7	8.3	12	44.4	55.6	9	66.8	33.2	208
Filipino	60.6	39.4	33	87.5	12.5	24	65.8	34.2	38	66.7	33.3	3	70.4	29.6	98
Other	81.3	18.8	16	100	0.0	3	0.0	0.0	0	0.0	0.0	0	72.7	27.3	22
No Response	16.7	83.3	6	100	0.0	3	0.0	0.0	0	4.0	2.0	0	33.3	66.7	13
Total	70.3	29.7	599	84.9	15.1	364	80.2	19.8	202	55.0	45.0	40	76.0	24.0	1205

What is immediately evident from inspection of Table 10 is the reduced cell sizes for some of the ethnic groupings. This is indicative of one of the unanticipated findings of this report, that of the high non-returning rate observed for all cohorts tracked in this study. For those groups with sufficient cell sizes to make reliable observations, the results do appear to vary by campus. In general, Anglo-American students enrolled in approximately similar proportions (92%) across the colleges and ECC. There are differences for Asian-American students when examined by college. At City College and ECC, approximately 33% of the Asian-American students enrolled in degree-applicable courses while at Mesa and Miramar Colleges enrollment of Asian-American students in degree-applicable English courses ranged from approximately 58% at Mesa to 53% at Miramar.

As noted, when examined by campus for each ethnic and racial grouping the small cell sizes which result greatly limit generalization. Thus examination of these trends for the entire SDCCD appear to be of greater value. With the exception of the Asian-American students, a majority of students did enroll in degree-applicable courses in English. These results follow closely the recommended placement for these students based on test results. As with test scores, these placements varied when examined within ethnic and racial groupings. Approximately 93% of Anglo-American students enrolled in degree-applicable English and reading courses. For Latino/Hispanic-American

students, approximately 67% enrolled in degree-applicable English and reading courses, with variation among the campuses. Again, reduced sample sizes for some of the ethnic groupings when analyzed by campus prevent generalization. Analysis of the non-response grouping indicates that the overwhelming majority of this group did not identify English as their primary language, which may have resulted not only in their high rates of non-AA enrollment, but their difficulty in completing the questionnaire.

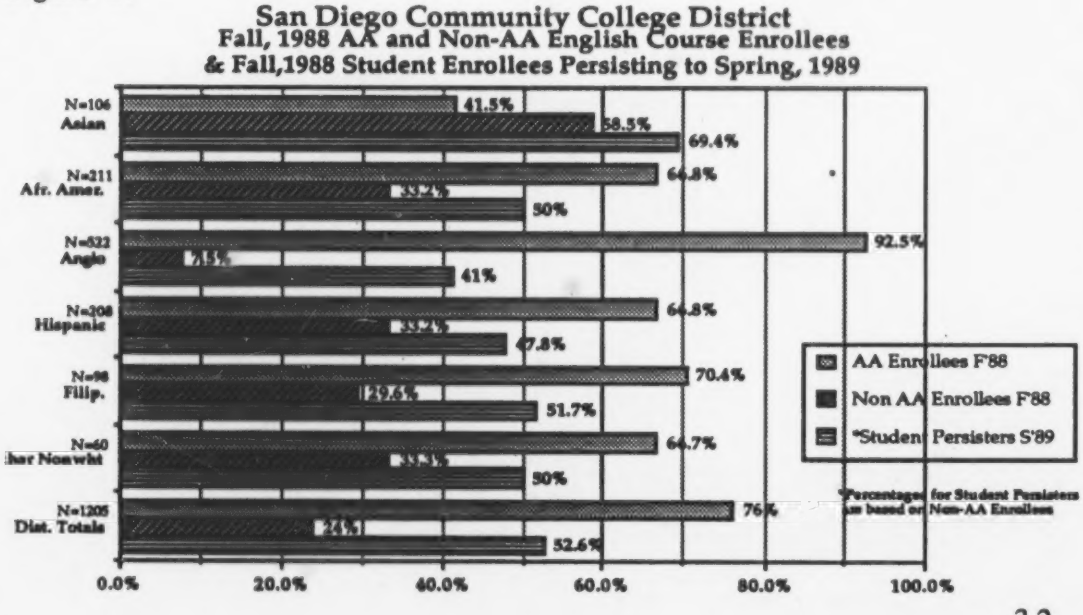
Persistence of Non-AA Placed Students

As described in the introduction to this report, disproportionate impact is said to occur when, in the words of the State Chancellor's Office of the California Community Colleges, "an ethnic group is represented in college-level courses after basic skills coursework in a smaller proportion than other ethnic groups." (SCOCCC, 1989; p. 4.1) According to this view, although it is important to view the effects of testing on student placement and subsequent enrollment patterns, disproportionate impact is best understood in terms of the ethnic profile of those students who previously enrolled in below college-level courses and persisted to the following semester and took one or more courses at a college-level. Figures 14 and 15 indicate the enrollment patterns of the ethnic and racial student cohorts who placed and subsequently enrolled in developmental or remedial coursework, and then re-enrolled (persisted) in degree-applicable courses for the Spring, 1989 semester.

Persistence within Ethnic Grouping

As discussed earlier, figure 13 indicated the proportion of students within each ethnic grouping enrolling in non-AA English and reading courses, and the proportion enrolling in degree-applicable courses in these same areas. Figure 14 below reproduces these data, but adds a third element, a bar depicting the persistence rates of the students in the below-AA group. The bar labeled "Student Persisters S'89," represents the proportion of the original non-AA students within each ethnic grouping who returned the following semester and enrolled in degree-applicable course(s).

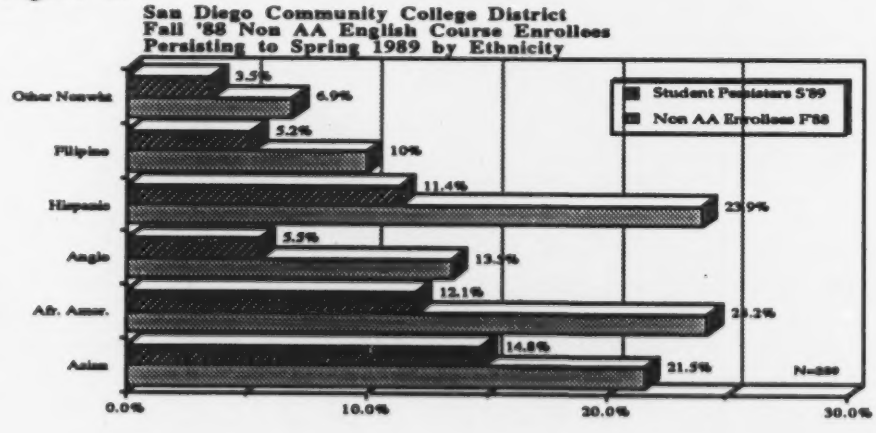
Figure 14



Re-enrollment or persistence into the Spring semester does appear to differ for the various ethnic and racial cohorts tracked in this study. Asian-American students demonstrated the highest persistence rate of the groupings in the analysis. Of the approximately 33% of Asian-American Non-AA enrollees in the Fall semester, almost 70% returned and enrolled in at least one degree-applicable course the following Spring. Anglo-American students demonstrated the lowest persistence rate. Of the approximately 8% enrolling in non-degree-applicable English courses in the Fall, 41% returned the following Spring and enrolled in degree-applicable course(s). For the rest of the cohorts, the rate of persistence as defined here was approximately 50%. Again these data indicate that there is substantial attrition between the semesters, but this effect is observable for all groups in the study, and does not appear to be systematic. Although Anglo-American students demonstrated the lowest persistence rate as defined here, they had also the smallest proportion referred to and enrolled in developmental English courses. Although Asian-American students scored the lowest on the standardized tests, and enrolled at higher rates into non-degree-applicable courses (primarily ESL), they demonstrated substantially higher persistence than all other groups in the study. Reasons for this are unclear at this time and warrant further research. Again, in some cases the small cell sizes resulting from overall high non-return rates limit generalization, but this does not appear to affect disproportionately any one group over another. Thus it appears that while skills testing does affect the enrollment patterns of cohorts tracked in this study, the re-enrollment patterns appear consistent with the possible exception of Anglo-American students who demonstrated the lowest persistence rate.

Figure 15 below presents a different perspective on persistence rates for the groups in this study. This figure depicts the ethnic composition of the students enrolled in remedial or developmental courses (non AA enrollees F'88) and the ethnic composition of the entire group returning in the Spring to enroll in college-level coursework. Of the total group of non-AA enrollees in the Fall, 21.5% were Asian-American, 24.2% were African-American, 13.5% were Anglo-American, 23.9% were Latino/Hispanic-American, 10% were Filipino, and the remaining 7% were other non-Anglo. The bars labeled "Student Persisters S'89" indicates the ethnic composition of the entire persisting group and indicates the relative attrition for each group. Thus, while approximately 24% of the total group of below-AA enrollees were African-American, they represented 12.1% of the persisting group, indicating an approximate non-return rate of 50%. While Asian-American students represented 21.5% of the non-AA enrollees in the Fall, some six percent did not return in the Spring to re-enroll in a degree-applicable course (14.8%). Viewed in this way, with the ethnic composition of the entire non-AA sample as a base, it still appears that attrition rates for Anglo-American students is the highest, and lowest for the Asian-American students in this analysis.

Figure 15



Implications and Directions for Future Research

This study provided an essential first look at the effects of skills testing on a cohort of students who participated in the Matriculation process. These kinds of analyses are essential to understanding how the assessment and placement process potentially affect the enrollment and persistence patterns of students placing into developmental or remedial courses. While the study did not reveal disproportionate impact as defined here and described by the State Chancellor's Office (1989), the study did indicate that a substantial number of students from all backgrounds do not persist or re-enroll. As noted earlier in this study, the strict criteria used for cohorts to be included in this study, while introducing rigor into the design, also had the effect of eliminating many students from the analysis. Students had to have tested during a prescribed testing period, enrolled that same semester in either a degree- or non-degree-applicable English course, completed that course with a grade, and then re-enrolled the following semester in one or more degree-applicable courses. While this is the model of the matriculating student, students often do not behave according to models. Many apparently chose not to enroll directly in college that semester, or did not enroll in an English course, perhaps choosing instead to wait until the following semester to attempt an English course. It is also important to note that the time period of this study was early-on in the implementation of matriculation in the SDCCD, thus practices in the other components may have changed somewhat and the process may be resulting today in greater numbers of students testing, enrolling, developing an educational plan, and persisting at greater rates than indicated here. The most recent Matriculation report from the State Chancellors Office (SCOCCC, 1991) indicates that the colleges report that student academic performance, particularly those entering at the pre-collegiate level, and the retention and persistence among students have improved substantially since the implementation of Matriculation in the California community colleges (p. 2). Therefore it would be useful to conduct this study again using the same criteria to confirm the reliability of these findings given the relatively small cell sizes. Also, this information could be displayed by college to determine differences among the three colleges in the SDCCD. It was noted in Part I of this report that City College and ECC students in the college program scored significantly lower than their counterparts at Mesa and Miramar Colleges, thus there may be differences in persistence because of lower initial skill levels and placements.

It would also be instructive to examine the placement rates of students on the mathematics skill assessment to determine disproportionate impact. As indicated by prior research into the performance of different ethnic and cultural groups on standardized quantitative skills assessments (Astin, 1990) one might assume that different placements might result because of the lessened demand for English language skills demanded on the mathematics placement test. Given the relatively high percentages of SDCCD students whose primary language is not English, the effects of mathematics testing on the placement and enrollment patterns of students by ethnic and gender groupings would be informative.

Summary

An integral component of the institutional mission of the California community colleges is to create an educational environment that is responsive to all adults interested in strengthening their academic or vocational skills. This notion of equal access for all adults resulted in open-door admissions polices at the two-year colleges and a substantial portion of the population in the late 1960's and early 1970's took part in the educational offerings of the colleges. Today, as then, many persons equate open admissions with absence of any academic performance criteria in the admissions process. An alternative view of open admissions requires that all students interested in furthering their education be able to do so without undue restrictions. Under this view, special academic requirements that rely in part on past academic performance and preparation or test scores in

determining admission or access to courses are viewed by some as restrictive. This view holds to the notion that these types of criteria are incompatible with open admissions and the mission of the community college.

Statewide, and nationally the strategic changes required of community colleges to cope with the dual issues of access and quality are formidable. In the past, serving all students regardless of preparation meant additional funding for the colleges. With the era of fiscal constraints have come enrollment caps, tuition, and demands for accountability and indicators of effectiveness from state officials, local boards, and the voting public. Increasingly through statute and necessity, colleges are compelled to examine themselves in the milieus of public policy and community demands. Deegan & Tillery (1985), and Cross (1985) maintain that questions of institutional identity and strategic niche will be of primary importance in current and future generations of community colleges.

Locally, these issues are of primary importance. Although this study did not reveal disproportionate impact in terms of following semester persistence of non-AA placed students, it was also shown that certain ethnic and linguistic groups did not perform as well on the tests as did Anglo-American students. This possibly resulted in significantly higher percentages enrolling in developmental and remedial courses in English and reading. What was also revealed was that the following semester the non-returning rate of all students in the study, both AA and non-AA placed, was high, regardless of cultural and linguistic background. Counselors, faculty, and staff have the responsibility to ensure that students are full participants in the skills assessment process and that placement decisions and recommendations be made in partnership with the students. The process should be a mutually informing one; students should understand what is expected of them in college-level courses, and pertinent staff should be informed of educational background and other abilities, both cognitive and non-cognitive, that the student may possess such as motivation, interest, and employment status that may provide alternative forms of assessment and predictors of success. Skills assessment is more than just a score on a standardized test; it involves assessing several attributes not revealed in test scores. Using the professional judgement and expertise of counselors, faculty, and staff in concert with student-supplied information about other measures of ability and motivation, the course placement process will help to ensure that the 1990 SDCCD Master Plan twin ideals of access and quality are not mutually exclusive notions.

RECOMMENDATIONS

Speededness of the Tests. Anglo-Americans appear to address most test items, and do so with greater reliability than other groups examined. In part, because of the observed differences between the norming group and the SDCCD tested population, it may be that students with different educational backgrounds and languages need additional time to complete the test. This finding may partially explain differences in test performance. This observation suggests that it may be worthwhile to extend the testing time by a few minutes so that more students are able to attempt all test questions. A similar difference was found to exist in the last CGP Reading test question attempted by the various groups in the study. Again, given the differences found between the SDCCD tested population and the CGP norming population in terms of educational preparation and ethnic background in Part I, extending by a few minutes the time to complete the CGP placement tests may result in better performance by all groups without negatively compromising the accurate placement of students.

Questionnaire Completion. The data collected on the questionnaire are useful for improving matriculation research, thus greater efforts should be expended to assist students in completing the questionnaire. The data collected such as high school GPA, grades received in last English or math course, and projected need for student services are valuable both in terms of understanding differential placement, and in identifying students in need of counseling, tutorial, and other support services. The survey questions may also be used as an assessment referral tool. If a student appears to be experiencing great difficulty in reading or understanding the questions, then assessment technicians may advise that student to take the ESL test, or refer them to a counselor for appropriate assessment. It appears that the pattern of non-response rates to the survey questions generally reflects the test score distribution, particularly for under-represented linguistic student groups.

Orientation and Preparation for Tests. As is the case in much of the nation (Cohen, 1988), most of the SDCCD students do not enter college directly from high school. The majority (56%) of the SDCCD sample had worked at least one year before entering college. This is over twice the rate for the norming sample which reported approximately 25% working at least one year before starting college. For those who have been away from school for an extended period, the test taking situation can produce greater anxiety, particularly for those who are less confident in their abilities to succeed or have generally lower academic self-esteem. These findings suggest that during or prior to the orientation process, students should be introduced to the skills testing process, and given some tips on how to prepare for and take standardized tests. In addition, some materials might be distributed to those students who have been out of school for some time to enable them to "brush-up" on some of the vocabulary or mathematics skills they may have forgotten. This might improve their performance or at the very least give a more accurate measure of academic ability than of test anxiety when making a placement recommendation.

Use of Raw versus Standard Scores. The tests should be used in the manner intended by the test publisher. Currently the SDCCD uses raw scores to make placement recommendations. The use of standard scores limits the use of scores at the extremes of the distribution for placement. One positive effect of this is to reduce the possibility of a referral based on statistical probability at the lower end of the range of possible scores. The range of the standard scores for the reading test is from 20 to 69, while the writing test ranges from 20 to 71. There are 35 items on the reading test and 40 items on the writing test. Because the SDCCD relies on raw scores for referral, the range and standard deviations are somewhat smaller and hence more restricted in terms of the distribution. In addition, all the technical data from the publisher for test scores and norming

groups were done using standard scores. Any updates the test publisher may provide in terms of ethnic, gender, and linguistic group comparisons will be published using standard scores. It is also conventional among organizations using standardized tests to use standard and not raw scores in interpretation.

Use of Multiple Measures of Ability. As indicated by other researchers (Cohen & Friedlander, 1989), the use of multiple criteria in determining placement is essential to accurate and equitable placement. In their research, the use of multiple of criteria rather than just test scores in isolation reduced the number of students who would have been denied access into courses in which they could have succeeded. This study indicates that differential placement on the basis of test scores occurs, and that students tend to follow the recommendations for placement into pre-collegiate and collegiate level courses. Important decisions about student placement should not be made on the basis of a single test. Therefore, multiple sources of information, and, where possible, direct evidence of what the college expects the student to know or be able to do, should form the basis of the placement decision. It is not reasonable to expect that a single assessment can reliably provide the sole measure of ability, and that to enhance the educational opportunities of all students, various other forms of assessment should be included in any important decision-making about students. These include some of the more traditional indicators of academic ability such as transcripts, work samples, writing samples, work experience, high school GPA, etc. This should also include affective indicators such as intellectual self-esteem, self ratings of academic ability, self-confidence, and importance of college to the individual. Also included below are some examples of alternative forms of assessment which may supplement the current process to minimize disproportionate impact.

Alternative Forms of Assessment. If we seek to enhance talent development in our students, then actual demonstrations of such skills and talents rather than over-reliance on a test score in making placement decisions would be appropriate. If we are interested in student writing and response to open-ended questions, then assessment for some courses might be based on actual samples of student writing rather than on multiple-choice tests in which students identify errors in writing passages in a multiple choice format. Assessments such as these would ask students to supply answers, perform an observable task, and to provide direct evidence of their abilities in the subject area of interest. This type of assessment is perhaps more important given the SDCCD student population. Often tests do not reveal the real-life skills of an individual due to cultural or language differences, or time spent in non-academic pursuits before entering college. For these students, alternative forms of assessment would help to provide a range of available evidence for counselors, faculty, and students to make informed decisions about where to begin in the college curriculum.

Self-Assessment Checklist (Corona and Mahler, 1991). One example of an alternative assessment device to assist counselors, faculty and students in the placement decision has been developed in draft form by Corona and Mahler (1991) at San Diego City College (see **Appendix B**). This self-assessment was developed to help take into account information not accessed by the standardized math tests to help guide the placement decision for students. Factors assessed include employment status, importance of college attendance by significant individuals in the student's life, performance in high school, parental responsibilities, transition time from high school to college, and other personal information which research has shown to affect course performance. Students are asked to complete the short questionnaire and together with scores achieved on the mathematics placement test, consider the most appropriate placement level for themselves. Thus, students are not only asked to consider the several factors in their lives that potentially impact upon performance in college, but to also take an active part in the placement decision. This information could also be used to supplement the important information collected on the CAPP® questionnaire which has

also been shown to be highly correlated with college performance (Astin, 1991; Cohen & Friedlander, 1989). The student self- assessment device has the potential of both empowering and informing the student.

Content and Task Sample Assessment. The State Chancellor's Office has stipulated that colleges demonstrate that assessment tests used to place students be used in a "valid manner." That is, the assessment tests should reflect the content knowledge demanded for the academic area of interest (English test for English courses, math tests for math courses or those demanding a certain level of mathematics skills). There are several tasks demanded of students depending on academic discipline, not all of which are measured on the skills assessment tests (SDCCD Research and Planning, 1990). While some courses place a premium on reading and writing skills, others place greater emphasis on speaking, listening, reasoning, study, and quantitative skills. Some courses evaluate student performance through course participation, essay exams, oral tests, short answer tests, term papers, objective tests, or some combination of the above. With the various skills demanded in the various entry level courses in the college arts and sciences programs, presenting the students with examples of the kinds of skills and tasks expected of them to successfully complete the course would be of benefit. For example, for entry courses in psychology or sociology, passages from the texts or articles used might be reprinted and shown to students during orientation. In addition, examples of tests or test questions, and tables and graphs students must be able to interpret could be developed and shown to prospective students prior to enrolling. Often students, particularly those out of school for some time, or who are "first generation," don't know what they are expected to do to succeed in college-level courses. Further, within the college and various departments, there are a host of disciplines which vary greatly in the skills and time required to successfully challenge the course. Academic departments could prepare large displays or "story boards" with the course requirements listed, and examples of the difficulty of the text, the writing assignments, and other cognitive demands of the course for display during student orientation. Alternatively, this information could be published and distributed to matriculating students in a tabloid format, or in a format similar to the class schedule. Perhaps once given these additional insights provided by actual examples of course content and task samples into the course, students would be better able to decide for themselves appropriate course placement.

Faculty advisors from several disciplines might be made available during orientation week to provide matriculating students with additional insights into the cognitive and time demands of prospective courses.

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Appendices

Appendix A

Table A-1
Students in the Norming Sample and the SDCCD*

	Norming Sample		SDCCD*	
Gender	Number	Percentage	Number	Percentage
Female	18,160	59.0	5,463	47.6
Male	12,345	40.0	5,637	49.1
No Response	407	1.0	383	3.3
Age				
15-17	1,866	6.0	122	1.1
18-20	16,931	55.0	2,785	24.3
21-23	3,370	11.0	1,902	16.6
24-26	2,157	7.0	1,621	14.1
27-35	3,391	11.0	2,599	22.6
36-44	1,169	4.0	1,149	10.0
45+	413	1.0	395	3.4
No Response	1,615	5.0	910	7.9
Ethnicity				
Native Amer	179	1.0	101	.9
Afr-Amer	6,435	21.0	1,543	13.4
Anglo-Amer	22,752	74.0	5,946	51.8
Latino/Hisp	476	2.0	1,671	14.6
Puerto Rican	148	1.0	**	**
Asian	445	1.0	1385	12.1
No Response	477	2.0	837	7.3

APPENDIX B
STUDENT SELF ASSESSMENT (DRAFT)

HOW DO I KNOW WHAT COURSES TO TAKE?

The assessment tests City College offers will provide you with valuable information about your current skill levels in math and English. However, an assessment test cannot take into account other factors which may affect your success in college, such as the other demands on your time caused by work and/or family, the length of time since you were last in school, etc..

There are several factors both students and faculty identify as influencing student success in college. the questionnaire which follows will help you identify how these factors apply to you, and we hope you will find the information helpful when you select what courses to take.

STUDENT SELF-ASSESSMENT

Answer "yes" next to the statement if it applies, or "no" if it does not.

_____ 1. The people who are most important to me support my attending college.

_____ 2. I was an average or above average student in high school.

_____ 3. I have been out of school less than three years.

_____ 4. I have access to people who will be able to help me if I have trouble learning the material for my courses.

_____ 5. Completing my educational goal is very important to me.

_____ 6. I am working full-time.

_____ 7. I am responsible for the care of young children or others who demand a great deal of my time.

_____ 8. I spend a lot of time thinking about or dealing with personal or family problems.

Put a check-mark by any "no" answer to questions 1 thourgh 5 and by any "yes" answer to questions 6 through 8. Look at the checked statements carefully, because these identify factors in your life which could affect your work at City College. If, after some thought, you feel that a particular checked area will not present a problem, erase the check mark. After this process, if you are still left with several marks, don't be discouraged. You will have some special challenges not faced by all students, but you can still be successful at City College, and the following suggestions may help you get off to the best start:

If your math or English placement result recommends several course options, consider taking the lower numbered course.

Consider taking a reduced unit load (for example, if you were thinking of taking 12 units, you might want to take 6 or 9).

Appendix B (cont.)

These suggestions are not based on any presumptions about your ability, but simply on the particular complexity of your situation. Even if you do not have any checked areas to consider, you may still want to take the suggestions given above, or you may decide that you want the additional challenge of a higher level course.

Professional counselors are available if you would like to discuss your individual concerns and seek advice about course placement.

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San Diego City College
April 12, 1991

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